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JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

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THE 80th ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN TORONTO, CANADA, IN 1932—August 22nd–27th, Royal York Hotel, Headquarters, R. B. J. Stanbury, 43 Victoria St., Toronto 2, Canada, Local Secretary.

The 1932 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conference of Pharmaceutical Association Secretaries, of the Pharmaceutical Law Enforcement Officials and the Plant Science Seminar will also be held in Toronto.

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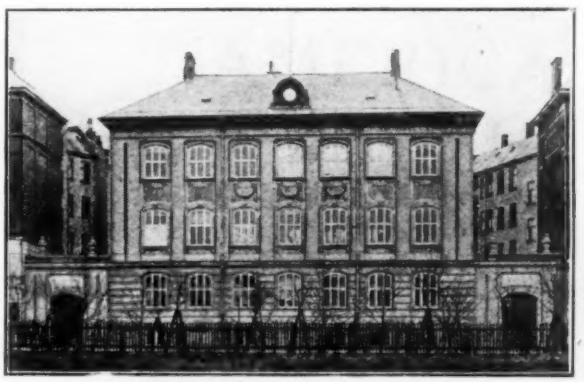


Farmaceutisk Læreanstalt, Copenhagen.

THE building shown herewith houses an independent State institution under the Ministry of Education of Denmark. The building was the gift of *Apotheker* Christian D. A. Hansen of Copenhagen, who died in 1913; he did not make his fortune in the *Apotheke*, but in industrial manufacturing. The illustration is shown, because it represents a gift—an appreciation of one who engaged in manufacturing without losing his attachment for the profession. The building is more than a mile away from the main buildings of the University, near to the chemical and botanical institutes; the library contains upward of 7000 volumes, including publications from all parts of the world.

HOME OF SOCIETIES OF GERMAN PHARMACISTS.

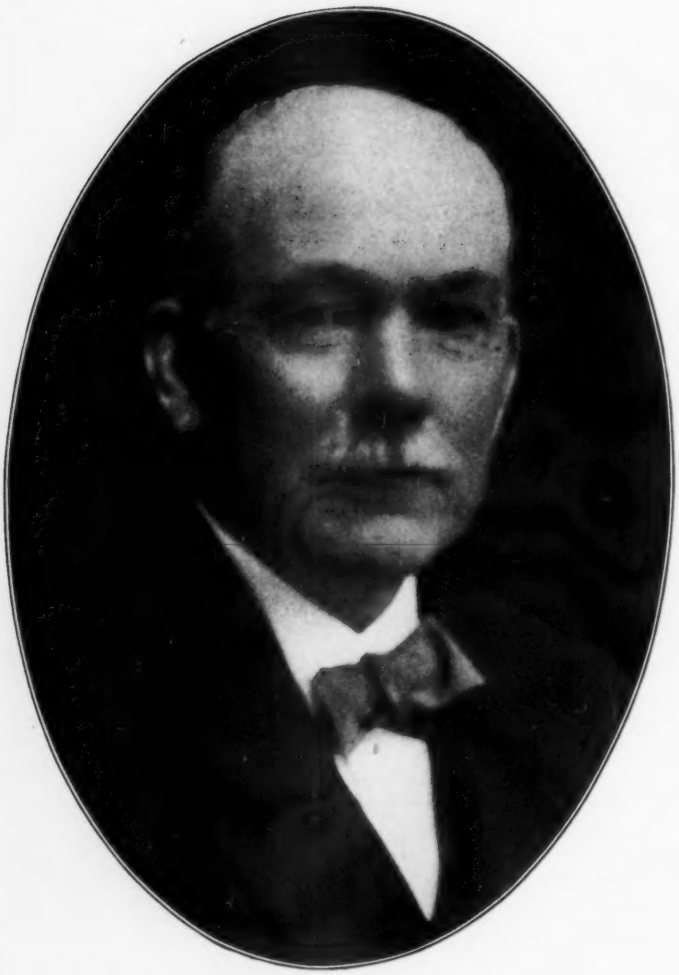
THE picture herewith is that of the home of a number of German pharmaceutical societies. It houses the Handelsgesellschaft Deutscher Apotheker Actien Gesellschaft, a cooperative institution of about 4000 shareholders; the Deutschen Apotheker-Verein; editorial rooms of the *Apotheker Zeitung*. It has also a hall with a seating capacity of 150 and a small reception room—the walls of the rooms are decorated with photographs of outstanding pharmacists.

The façade of the building is ornamented with medallions of famous pharmacists.

The number of books on pharmacy and allied subjects is said to exceed that of any other pharmacy library.

Vereinshaus Deutscher Apotheker, Berlin.

* Courtesy of the *Journal and Pharmacist*, and of William Mair, Honorary Member of the AMERICAN PHARMACEUTICAL ASSOCIATION.



WILLIAM MAIR.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XX DECEMBER, 1931 No. 12

WILLIAM MAIR.

William Mair, F.C.S., M. P. S.—Honorary Member of the AMERICAN PHARMACEUTICAL ASSOCIATION, elected at the Miami meeting, some of whose descriptions and photographs of historic pharmacies in Berlin, Stockholm and Copenhagen have appeared in the JOURNAL, is one of the most widely traveled of British pharmacists and is still "hot on the trail."

In the course of the journey, in which he collected the material for the above-named articles, he made a maiden trip by air from Hamburg to Berlin. At one time or another during the past thirty years Mr. Mair has visited, always with a seeing eye and an understanding mind, the United States and Canada, the French and Italian Rivieras, Portugal, Austria, Holland, Switzerland, many parts of Germany, Gibraltar, some towns of Spain, Morocco, Canary Islands and Madeira.

He has written on Pharmaceutical Education in some Northern countries of Europe and with first-hand knowledge and judgment on the conditions of pharmacy in most of the countries named. He has not described any pharmacy abroad which he has not personally visited except the famous one in Russia for which he has drawn on collected material in the *Pharmaceutical Journal* of London, in 1922.

Mr. Mair was at one time dispenser to the Royal Infirmary, Dundee, and compiled and was editor of its pharmacopœia and was also hospital instructor in materia medica, the courses being recognized as an extra-mural by Edinburgh University.

Later, Mr. Mair went to India, where he spent four years, and while there published in collaboration a book on "The Indigenous Drugs of India" for which the late Sir George Watt, C. I. E., the great author on the economic products of India, wrote an appreciative preface.

On his return to England, Mr. Mair communicated a paper on the same subject to the British Pharmaceutical Conference. He combines business acumen, industry, practical knowledge of and interest in the professional side of pharmacy and the *savoir faire* of the man of affairs and culture.

On the second visit to the United States in 1912 Mr. Mair was received by the late Prof. Joseph P. Remington and made the acquaintance of many of the members of the AMERICAN PHARMACEUTICAL ASSOCIATION. He enjoyed during many years the friendship of the late Dr. H. M. Whelpley, whom he had met in St. Louis on a previous visit.

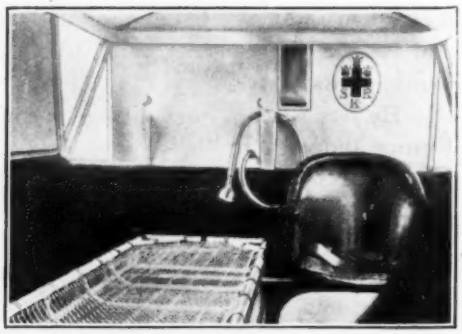
Our Honorary Member is a life member of the Pharmaceutical Society of Great Britain, a fellow of the Chemical Society and an associate member of the International Pharmaceutical Federation.

Appreciation is expressed to Mr. Mair of the numerous photographs and cuts donated by him to the JOURNAL. As stated above, some of these have been used and others will follow in succeeding issues of the JOURNAL. It is hoped that Mr. Mair will find time to attend the joint meeting of the Canadian Pharmaceutical Association and of the AMERICAN PHARMACEUTICAL ASSOCIATION to be held next year in Toronto, August 22nd to 27th. An article in the *Pharmaceutical Journal and Pharmacist* is drawn upon for the preparation of this brief sketch.

SWEDISH HOSPITAL AIR SERVICE.

We are quoting an article on the above subject by William Mair in the *Medical Journal and Record* for December 17, 1930, in the following: He states that Sweden was the first country in the world to institute civilian transport for patients. The Swedish Red Cross Society provides no aeroplanes; in return for the services of army pilots and mechanics, the use of hangars and work shops—the Red Cross undertakes certain specific obligations such as placing its machines at the service of the government in times of national emergency. At Stockholm the air-base obtains the *Radiumhemmet*, with fifty-six beds. The seaplanes for the above service are always tuned up and ready.

Aeroplane ambulance service.



Interior of ambulance.

Three publications are issued and distributed to the public by the pharmacies of Sweden; one of these is a 48-page annual publication and lists doctors and specialists with their addresses, consulting hours, telephone numbers and other details. The second booklet issued for 1930 contains 32 pages and gives a list of the public and private hospitals under headings that designate their special services, which include the air ambulance service. The third booklet contains a list of dentists, their addresses, consulting hours, etc. It also lists the pharmacists of Stockholm who contribute to the publication of these bulletins. The same list is printed and issued in Helsingfors, capital of Finland; in accordance with the laws of the country, one edition is printed in Finnish and another in Swedish.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase Street, BALTIMORE, MD.

LOOKING BACKWARD, THINKING FORWARD.

AT THIS season of the year when the "old" and the "new" are brought together, thoughts review the past and hopes strengthen the possibilities and opportunities of another period of service—for every year brings to that which follows, unfinished work. While the waning year has brought many unpleasant experiences it has left impresses which will serve as lessons that should make the solution of confronting problems possible. The experiences of the year are different from those that preceded, but there are many prototypes. The recently published diary of "A Quaker Forty-Niner" (Charles Edward Pancoast, an apothecary) brings to light situations which in some respects are not so very different from those of to-day—general conditions were relatively worse and existing phases of medicine and pharmacy of his period have decidedly improved since then.

Neither pharmacy nor the drug business has produced large fortunes for individuals as a result of investments in these lines and, consequently, the effects of prosperous times and periods of depression are not as keenly felt by those so engaged. It is true that a few years ago the accruing profits were greater than they have been during the past year but there are indications of improved conditions. We express our *Christmas Wish* for a joyful season of gladness, health and happiness, and possibilities for contributing to the welfare of others.

Just as other activities, pharmacy occasionally faces a crisis, but it always comes through and, in our opinion, improved by the experience, due to the fact that pharmacists perform a service which is essential for public welfare. The over-development of the merchandise side of the drug store seems to have reached a peak and now more thought is given to cut out items that characterize the department store.

There is a necessity for many druggists to carry stock to increase their profits and supply patrons who also require pharmaceutical service. The business should not obscure the fact that pharmacy is fundamental and much of the merchandise sold is part of a service the patrons demand—the public has a very important part in shaping our way of doing things, and this applies also to other professions.

The *New Year's Message* is one of hope—that there will be increased prosperity in 1932 in which pharmacists will share and benefit all branches of the drug-trade interests, for pharmacists represent these as distributors, and their prosperity and advancement is necessary, if other divisions are to prosper. There is no incompatibility between commercial activities and professional conduct, when the guiding thought is service.

A hopeful wish is that the "American Institute of Pharmacy" may become a reality before the end of 1932, and that the idea of providing endowments, for this and other institutions of pharmacy, may develop in the minds of those whose successes have been won in the drug-trade and related industries.

Let genuine Christmas fellowship possess us. A new year is upon us with new duties and new opportunities.

THE TREND OF PHARMACY IN ITS RELATION TO THE PUBLIC.

THERE is an evident "back to pharmacy" trend in drug stores, whereby a better public service is rendered. For a number of decades the development of drug stores was largely in merchandising lines, so that in the "modern drug store," in many instances, the fundamental structure was obscured. This trend was the result of public demand and the desire of the votaries to increase business volume and profit. Now it is being recognized by many that the so-called side lines, which are represented in the department stores and other establishments, do not greatly augment profit, because it is not possible, except in relatively few drug stores, to turn the stock often enough to yield the expected net profit. In this development, items, such as sick-room supplies and a long list of other articles formerly major parts of the drug stock and which properly belonged there, were neglected.

Seemingly, the ratio of exclusive pharmacies is small, but there are opportunities for most drug store owners to plan their stocks on a profit-producing basis by the inclusion of items that bear a closer relation to pharmacy. There may be reason for competitive price-cutting on merchandise sold in different types of stores, but in the sale of medicines quality will appeal to the public as of first importance.

The public can and should be informed relative to the significance of qualified pharmacists for handling medicines of all kinds, drugs, chemicals, poisons, etc., that untrained persons do not, as a rule, know the danger and responsibility in handling medicine, nor the importance of quality and uniformity. Herein is an opportunity for pharmacists; they have been the first to recognize the dangers of narcotics, of substandard drugs and chemicals and have, unhesitatingly, advised the public and legislative bodies of the need for proper regulations, but they have been somewhat backward in insisting that the regulated items should be handled by qualified pharmacists. They have been foremost in the preparation of standards, but have not strongly enough insisted that all who deal in these products should have the necessary knowledge for determining strength and purity and a realization of their responsibilities to the public. Pharmacy Week brings the importance of pharmacy to the attention of the public, but what is needed is constant, dignified observance, and that rational, reasonable information relating to the practice of pharmacy be passed on to the public, just as doctors and dentists have done and are doing. Quoting Dr. W. W. Charters:

"The materials that the pharmacist deals with are in many cases so dangerous in their effects upon physical well-being, and the problems that face him in handling these materials and in his contacts with the public require so much intelligence—if they are properly performed—that it is absolutely essential for him to have a rather wide and intimate acquaintance with the fundamental sciences upon which the art depends; and since the distinction between the trade and the profession lies essentially in the fact that the trade needs to know only the methods in order to be proficient while the profession needs to know the principles upon which the methods depend, it follows that pharmacy is a profession rather than a trade."

"Conspicuous among the duties of the pharmacist is the group which deals with public health. These activities constitute his major function in connection with social and community life. Filling prescriptions correctly is, of course, important

to the public, as is also the display and sale of reliable products; but in the service to public health the pharmacist serves the community in a unique way."

Dr. Hugh S. Cumming, Surgeon-General, U. S. Public Health Service has said:

"The usually strategic position and the familiar association of the drug store with medical matters in the popular mind places pharmacists in a position to render a material service to the community in connection with public health activities. It is the privilege, as well as the duty, of a pharmacist to coöperate with public health agencies in the dissemination of reliable information concerning the public health, and to assist the constituted public health authorities especially as relates to communicable diseases and the protection of biologic products. It is, therefore, evident that a pharmacist should possess information of wider scope on matters pertaining to the public health than is possessed by the average layman."

It is for the good of the public that the drug business provides profits for its votaries and, unquestionably, this requires sales other than drugs and medicines, but the sales of the latter should, as far as possible, be restricted to those learned in the profession of pharmacy, for the safety of the public and promotion and protection of public health. There should be closer adherence to the Pharmacopœia and National Formulary, and the professional responsibilities should strengthen the resolve of pharmacists that those engaged in pharmacy be qualified to assume its duties and responsibilities. Coöperation among those engaged in the divisions of the drug industries is necessary for its promotion; united they can place pharmacy in its best light before the public and gain its support, while division on essential questions impedes progress. There should be a proper appreciation of the pharmacists' relation to the public, and no wavering among the divisions of the drug industries, represented by its organizations, relative to the requirements of that relation.

STANDARDS FOR DRUGS.

THE professions of medicine and pharmacy of this country have worked closely together in the development and improvement of standards for the identity, purity and strength of the substances used in the prevention and treatment of disease. In this work, medicine and pharmacy have had, particularly in recent years, the coöperation of other professions that could contribute to the improvement of drug standards. The responsibility, however, has rested to a great extent upon medicine and pharmacy, for obvious reasons.

The results of more than a century of persistent efforts are the United States Pharmacopœia, concerned chiefly with simples, the National Formulary, devoted principally to preparations, and "New and Nonofficial Remedies," devoted largely to defining proprietary substances which are, under their rules, denied recognition in the U. S. P. and N. F. It is no exaggeration to state that these books of standards are recognized as the peers of those of any civilized country both as to scope and requirement, and that, so far as standards are concerned, the health and welfare of the public are as fully protected as the present sum of knowledge with respect to drugs makes possible.

It is to the credit of medicine and pharmacy that the Pharmacopœia and Formulary were established and were voluntarily observed as standards for drugs

by the members of both professions long before there was any public demand for legislative control of the purity and quality of foods and drugs; that the income derived from the sale of these publications has been used for the necessary expenses of their revision; that the extensive and important research work involved was carried on without charge; and that the abuses which were largely, if not entirely, responsible for drug legislation were connected with drugs and preparations that were without the scope of the U. S. P. or the N. F.

It is also to the credit of medicine and pharmacy that when national and state legislation, controlling the purity and quality of foods and drugs, was enacted, standards for drugs, perfected through years of experience and investigation, were immediately available in the U. S. P. and the N. F. That they were incorporated without question into food and drug laws as standards for drugs and that their revision was continued in the control of the professions responsible for them, was a well-deserved recognition of their standing and of the disinterested efforts that had brought them into being.

With the enactment of food and drugs legislation, the U. S. P. and N. F. passed from the status of standards, voluntarily observed by the professions charged by the state with the preparation and use of drugs, to that of legal standards for the purity and strength of drugs recognized in them, unless otherwise labeled. During the twenty-five years that they have occupied the latter status there has been very little criticism, either public or private, of the standards they offer and but little modification necessary to make them fit the added demands of legal standards. The national and state governments have, therefore, been furnished acceptable standards for drugs with no cost and the only return requested is the coöperation of the enforcement officials in suggesting improvements in the standards.

It seems obvious that those who are licensed to prepare and prescribe drugs—pharmacists and physicians—are best qualified to establish standards for their identity, purity and strength. Many of the substances used as drugs are also employed for other purposes in the arts and sciences. When dispensed as medicines, they must meet certain requirements that may not be necessary when intended for other purposes.

It is equally obvious that the standards for drugs, if they are to have the effect of law, must be enforced by a governmental agency, not by the professions directly concerned, and under the supervision of those acquainted with the preparation and use of drugs so as to avoid evasions, so far as this is possible.

Theory and practice evidence that our system of establishing drug standards through the combined efforts of medicine and pharmacy and such other professions as are directly concerned, and of their enforcement by governmental agencies, is effective and inexpensive.

Since the U. S. P. Convention of May 1931, the suggestion that the method of establishing standards for drugs was unconstitutional and that they should be established as well as enforced by a governmental agency has been advanced. In the November issue of the American Medical Association *Bulletin* the statement is made that "The drug standards in the United States are now established by a private corporation known as the United States Pharmacopœial Convention. The American Medical Association has endorsed the principle of the establishment

of such standards by a properly organized governmental agency and expects that legislation toward that end will be introduced during the coming session of Congress."

The development of the United States Pharmacopœia is the result of more than one hundred years of coöperation of the bodies represented in the U. S. Pharmacopœial Convention and for more than a quarter of a century the U. S. P. has been satisfactorily employed as one of the standards of the national Pure Food and Drugs Act. It is to be noted that no demand for change has come from any government official or enforcement agency, although pharmacopœial standards and the enforcement of the Food and Drugs Act were, this year, under searching consideration by a committee of the Senate, with the result that the appropriations for its enforcement were increased.

Pharmacy should continue its coöperation with the present system of establishing and enforcing drug standards and insist that no change be made until after proposed methods of revision have been given the most careful study and that they not be adopted unless it can be proved that a change is necessary and will, unquestionably, be more satisfactory than the present method of revision, wherein all affected interests are represented.

It is a responsibility of pharmacy to protect and guard the rights and safety of the public with respect to drugs. It is also necessary to consider the probable effect of a change in the method of establishing drug standards on the future of medicine and of pharmacy.—E. F. K.

Photograph Courtesy of Dean Frederick J. Wulling.

Educational Window, showing native drugs.

THE DEVELOPMENT OF PHARMACY AND OF THE U. S. PHARMACOPŒIA.

Liberty is taken in the selection of the title for part of the address of the Remington Medalist—E. Fullerton Cook, for 1931—delivered on the occasion of the formal award in Philadelphia, November 9th. Further mention will be made elsewhere in this issue.

E. FULLERTON COOK.
Remington Medalist.

Face of the Remington
Honor Medal.

"PHARMACY has always had a broad application. Hundreds of years ago it linked the primitive gatherers of herbs and roots in jungle, desert or mountain with the medieval mystic searching for the Elixir of Life or the Philosopher's Stone. As the medical sciences have developed pharmacy has always been associated in the gathering, experimenting, preparing and dispensing of medicines and therapeutic aids to treatment. To-day pharmacy serves as a bond between the most intricate researches of the medical sciences and the practical application of these to medical use. This is still the major field of pharmacy and there is no limit to the opportunities presented.

To the unprecedented developments of the last half century the medical sciences have contributed their share, and the intense activities of chemists, physicists and bacteriologists in health promotion are reflected in both medicine and pharmacy. In this constant search for facts we naturally see two trends. One of these is the discrediting and disuse of some of the older remedies and methods. The other is the discovery and introduction of the new. This situation is revolutionizing pharmaceutical service in everyone of its phases, but it is not destroying pharmacy itself, for many with ability and understanding have foreseen and are meeting the developments as they arise.

It is fully realized that the pharmacist graduating to-day must be thoroughly grounded in the principles and facts underlying pharmacy and then must specialize either in the sciences or in business, as personal plans for the future may demand. Pharmacy colleges are now equipping and organizing to take their part creditably in this advancing program.

Pharmacy is not worthy of survival as a profession if it cannot recognize and honestly face the new situation of this progressive and searching age. True, it is disturbing to be jostled out of one's complacency and discover that entirely new circumstances must be met. Are they, however, less interesting, or are the service opportunities less definite than in the past and is there not an adequate reward?

To stand still is to perish; pharmacy must awake or the opportunities will go to others more progressive and with a clearer vision.

What are some of the new conditions?

The manufacturing of chemicals and intricate pharmaceutical products are of necessity in the hands of large and modernly equipped organizations. Pharmacists rightly find abundant and profitable opportunity in these organizations. As technical experts in the many pharmaceutical operations, as analytical and research chemists, as managers, officers and frequently as owners, as salesmen, advertising experts and as detail men, they are the back-bone and brains of these organizations, great and small.

No training in the sciences can be too advanced for the pharmacist who would make his place in these business and professional groups. No one can deny that here is scientific pharmacy as never dreamed of in any previous period and with a fascination and a future so large that it has only been touched.

Think of the developments of the past few years; insulin, liver extract, biologicals, the vitamins, arsphenamin, the barbital group, local anesthetics, new antiseptics. . . . The number is legion and some of these new substances are notable contributions to the maintenance of health and the cure of disease. The medical sciences are absolutely dependent to-day upon pharmacy's contributions to medical practice and there is no danger that this need will lessen, for the field is expanding and the opportunities are only restricted by the limitations of the pharmacists entering this phase of practice.

As one reviews even the past twenty-five years it is difficult to believe that so great an advancement has been made in so short a time. In this period two legislative measures have brought about a revolutionary change in the programs and established policies of the nation in the matter of truth and recognized responsibility.

The Harrison Act controlling the sale and distribution of narcotics and the Food and Drugs Act requiring a true statement of fact concerning foods and drugs, have to their credit been incorporated as the foundation policy of all great pharmaceutical organizations and insure their perpetuation and success. Let it not be forgotten that both of these measures were promoted and made law largely through the initiative of pharmacists.

The activity of Governmental enforcement officials turned in the beginning, about twenty-five years ago, much more energetically toward the food situation, as there was the greatest need. In this field to-day the results are phenomenal, for coöperation is the policy of the large food distributors and almost universal compliance with food regulations is the result.

In the medical field the problems are far more difficult than when dealing with foods, but tremendous advances have been made and the policy of most producers to-day is entirely in harmony with the declared principles of the Food and Drugs Act.

It is believed that more and more the wise business heads, working with the professionally trained scientific groups responsible for the creation and production of medicinal products, will recognize the wisdom of a policy which avoids a constant clash with enforcement officials and will expand the program, so ably begun by the 'Contact Committee,' whereby the manufacturer, who is honestly

trying to maintain the ethical ideals of his profession, coöperates with the officials of the Government in a solution of the scientific questions involved, in the interpretation of terms and in the development of methods of analysis, fair to all.

But the retail pharmacist—what is his future?

Dispensing doctors, group practice among physicians, the clinic, the hospital, the expansion of drugless therapy, the abandonment of therapeutic teaching in many medical colleges, the growth of specialties, the chain store, cut prices, etc. These are problems enough to discourage the most optimistic among the older professional pharmacists. There is no panacea for these ills; pharmacy or no one group is responsible for this appalling array of problems facing the retail pharmacist of to-day.

Each difficulty, however, has its solution, and leadership in pharmacy is arising, ready to grapple with each problem in turn and furnish the answer. The dispensing doctor is largely an economic development. The Committee on the Cost of Medical Care intimates that up to a certain point this is justified but beyond it, the doctor must turn for help to the skilled dispensing pharmacist.

Certain it is that this development has given many pharmacists an opportunity to manufacture the products used and to detail and sell them to the doctor and, if the retail druggist is alert to his opportunities, he may often be the one to supply the doctors of his neighborhood with the drugs they dispense. Retailers often overlook this opportunity. Often it is the chance to do some manufacturing. Here, especially, the retailer has the advantage if he uses it, of supplying doctors with products which are free from the danger of subsequent proprietary exploitation, after the doctors have sufficiently introduced them. Physicians are becoming increasingly conscious of the use to which they have been put in this respect in the past.

Group practice offers real scientific opportunity to highly trained pharmacists. Every such group needs a well-equipped professional pharmacy as a unit in the organization. Here is no loss to pharmacy but a new field for development. The pharmacists entering this field must bring education, culture and scientific training of a high order, but a place is assured for those who can measure up to its possibilities.

In these large centers of medical service we see a number of pharmacies being established which reflect the best traditions of the profession. They are frequently referred to as ethical pharmacies but preferably as professional pharmacies and a limited number of these will continue to be the pride and ideal of all of us. May I again suggest that the same standards and very similar equipment and stock may be assembled at little added cost into a professional section of any drug store if the pharmacist is interested. He can thus reëstablish an atmosphere to which the public will respond and where they will come with confidence to have prescriptions filled, to buy sick-room necessities, medicines and supplies for the home; help for the eradication of insect pests, efficient antiseptics and disinfectants and many other items associated with the maintenance of health.

The hospital, too, must, more and more, use highly trained pharmacists who perform services of outstanding importance in the well-organized hospital. Proper planning and organization in this part of the hospital program has repeatedly

demonstrated a saving, in cost of drug supplies, many times in excess of the installation and maintenance of costs of the department.

Pharmacy must actively coöperate with medicine in developing this program and seeing that it is a requirement of every first-class hospital in the country. Here lies one of the greatest fields for professional pharmacy in the future.

Pharmacy has been unable to understand the reasoning which, a few years ago, swept the teaching of therapeutics from the majority of the medical colleges of this country. True, the new departments of pharmacology were expected to supply this need and perhaps so drastic a move was necessary to free the schools from the continuance of teachings no longer accepted by the new group who demanded physiologic evidence of every therapeutic claim.

Happily this extreme view is passing; more tolerance and greater wisdom has come and medicine still accepts a large and important group of therapeutic agents and is teaching the doctor how to use them scientifically and with results.

Pharmacy also has a real lesson to learn from the doctor; and unless it is learned the future pharmacist, however thoroughly trained to-day, will soon find himself out of step with the times. Medicine has intensively adopted the policy of keeping up-to-date by means of graduate schools, short courses in the latest developments of medicine, unbelievably helpful lectures and demonstrations at every Association meeting, local, state and national, and almost one hundred per cent membership and attendance. When is pharmacy ready to adopt a similar program? It is the answer to many of pharmacy's problems of to-day.

How about the specialty? These must not be condemned as a class. Many of the most dependable remedies of to-day were developed through the stimulus and the financial return made possible by the specialty. Other so-called specialties, however, are a menace to medicine and pharmacy and again the solution is largely in the hands of the retail pharmacist. He is supplied with the Pharmacopœia and the National Formulary, these are intended to provide standard remedies of every type, up-to-date, complete, efficient and palatable, a reliable preparation for practically every therapeutic need. Every recent survey of prescriptions and a study of the formulas and catalog of physicians' supply houses prove that the official substances are still used far in excess of any other therapeutic agents.

If every retail pharmacist, or if 25 per cent of them, were awake to this situation, they would be detailing the doctors of the country with official preparations and samples, and specialties would be less a factor.

As to chain stores and cut prices I believe the answer is sound business education. The independent pharmacist, adding personality to a business efficiency equal to that of the chain, need have no fear of competition.

The future of pharmacy is bright if we are willing to pay the price. Integrity, thorough training, happiness in the service of humanity, and willingness to work. This combination will insure a successful future to any pharmacist.

As the recipient of the Medal this year, I am not unmindful of the honor it conveys but much more am I impressed by the sense of added obligation it places upon its recipients. To justify the judgment of friends, to lend distinction to the memory of a great man, and to serve pharmacy as he served it, is a goal and a stimulus for intensified effort."—E. FULLERTON COOK.

SCIENTIFIC SECTION

PHYTOCHEMICAL NOTES.

BY EDWARD KREMERS.

No. 107. A SURVEY OF THE INORGANIC CONSTITUENTS OF THE SEVERAL PARTS OF *Monarda fistulosa*.*

BY ARTHUR A. HARWOOD.

While a study of the several constituents of the leaves, more particularly of the non-volatile constituents, was in progress a general survey of the various parts of the plant seemed desirable. This was especially true of the inorganic constituents which play an important rôle in the pigmentation of the plant. The results of this survey are herewith recorded.

The Root.—The moisture content of the air-dried material was found to be 4 p. c. (two samples) as determined by the xylene method. The same material yielded the following amounts of ash in two determinations:

	I.	II.
Water-soluble ash	1.19 p. c.	1.08 p. c.
Water-insoluble ash	10.17 p. c.	10.96 p. c.
Total ash	11.36 p. c.	12.04 p. c.

The water-insoluble ash resolved itself into:

Acid-soluble ash	2.99 p. c.	3.09 p. c.
Acid-insoluble ash	7.18 p. c.	7.87 p. c.

Upon analysis, the ash was found to contain the following elements and groups, the percentage, as above, being computed with reference to the air-dried material from which the ash had been obtained:

	Per cent.	Per cent.
Ca	0.34	0.34
Mg	0.071	0.071
Fe	0.19	0.18
Al	0.19	0.19
Cl	0.32	0.26
CO_3	0.025	0.024
SO_4	0.15	0.13
SiO_3	9.16	10.04
Undetermined	0.92	0.70

The Stem.—The moisture content of the air-dried material, as determined by the xylene method was found to be 6.60 p. c. and 6.40 p. c., respectively.

Two ash determinations yielded the following results:

	I.	II.
Water-soluble ash	2.62 p. c.	2.57 p. c.
Water-insoluble ash	1.45 p. c.	1.42 p. c.
Total ash	4.07 p. c.	3.99 p. c.

* Part of a thesis submitted for the degree of Doctor of Philosophy, University of Wisconsin. See also THIS JOURNAL, Vol. 18, page 228 and Vol. 19, page 1171; also Vol. 20, pages 17, 433 and 631.

The water-insoluble ash was constituted as follows:

Acid-soluble ash	1.41 p. c.	1.38 p. c.
Acid-insoluble ash	0.04 p. c.	0.04 p. c.

The following ash constituents were determined quantitatively:

	Per cent.	Per cent.
Ca	0.19	0.18
Mg	0.017	0.017
Fe	0.046	0.047
Al	0.049	0.047
Cl	0.028	0.028
CO_3	0.84	0.84
SO_4	0.16	0.16
SiO_3	0.79	0.83
Undetermined	1.95	1.84

The Leaf.—Two moisture determinations of the air-dried material yielded 7.40 p. c. and 7.20 p. c., respectively.

Ash determinations yielded the following results:

	I.	II.
Water-soluble ash	4.22 p. c.	3.87 p. c.
Water-insoluble ash	5.85 p. c.	5.66 p. c.
Total ash	10.07 p. c.	9.53 p. c.

The water-insoluble ash resolved itself into:

Acid-soluble ash	4.52 p. c.	4.67 p. c.
Acid-insoluble ash	1.33 p. c.	0.99 p. c.

The following constituents of the ash are computed with reference to the air-dried material:

	Per cent.	Per cent.
Mg	0.11	0.11
Ca	0.70	0.72
Fe	0.088	0.088
Al	0.18	0.16
Cl	0.035	0.025
CO_3	1.34	1.35
SO_4	0.63	0.69
SiO_3	1.74	1.35
Undetermined	5.25	5.04

The Bract.—The moisture content of the air-dried material as determined by the xylene method, was found to be 6.00 p. c. on two samples.

It yielded the following amounts of ash in two determinations:

	I.	II.
Water-soluble ash	5.24 p. c.	4.92 p. c.
Water-insoluble ash	7.31 p. c.	7.55 p. c.
Total ash	12.55 p. c.	12.47 p. c.

The water-insoluble ash resolved itself into:

Acid-soluble ash	4.23 p. c.	4.37 p. c.
Acid-insoluble ash	3.08 p. c.	3.18 p. c.

The quantitative analysis of the ash yielded the following percentages computed with reference to the air-dried material:

	Per cent.	Per cent.
Mg	0.11	0.11
Ca	0.59	0.58
Fe	0.10	0.10
Al	0.14	0.14
Cl	0.073	0.073
CO_3	1.40	1.40
SO_4	0.50	0.50
SiO_2	3.91	4.09
Undetermined	5.73	5.48

The Corolla.—Two determinations of the moisture content by the xylene method yielded 3.00 p. c. on both samples.

The following amounts of ash were obtained on two samples of the air-dried material:

	I. Per cent.	II. Per cent.
Water-soluble ash	4.66	4.64
Water-insoluble ash	2.81	2.81
Total ash	7.47	7.45

The water-insoluble ash resolved itself into:

Acid-soluble ash	1.75	1.84
Acid-insoluble ash	1.06	0.97

The following constituents were determined quantitatively, computed with reference to the air-dried material:

	Per cent.	Per cent.
Mg	0.061	0.059
Ca	0.32	0.31
Fe	0.088	0.088
Al	0.32	0.32
Cl	0.025	0.009
CO_3	1.73	1.73
SO_4	0.18	0.18
SiO_2	1.25	1.36
Undetermined	3.50	3.39

In the analysis of the ash constituents the following methods were employed:

Water-Soluble Ash.—For carbonates. The CO_3 content was determined by titration with $N/10$ hydrochloric acid, using methyl orange as an indicator.

For sulphates. The solution remaining after the carbonate determination was acidified with hydrochloric acid and barium chloride added until no further precipitation resulted. The barium sulphate thus formed was filtered, ignited and weighed and the SO_3 content computed from this result.

For chlorides. A sample of the water-soluble ash was acidified with nitric acid and an excess of $N/10$ silver nitrate solution added. The resultant silver chloride was filtered off and the excess silver nitrate determined by titration with $N/10$ potassium thiocyanate using ferric alum solution as an indicator.

Acid-Soluble Ash.—For iron and aluminum. The hydroxides of iron and aluminum were precipitated with ammonia as described by Treadwell.[1] The com-

[1] Treadwell and Hall, *Analytical Chem.*, Vol. II (1924), 110.

bined oxides of iron and aluminum resulting from the ignition of the hydroxides were dissolved in hydrochloric acid and the iron determined by the method of Zimmerman and Reinhardt.[1] The percentage of alumina was then determined by difference.

For calcium oxide. The filtrate from the iron and aluminum determinations was treated with oxalic acid and ammonium oxalate solutions as described in Treadwell's text.[2] The precipitated calcium oxalate was then collected on a filter and ignited and weighed as calcium oxide.

For magnesium oxide. The filtrate from the calcium oxide determination was treated according to the method of Schmitz as described by Treadwell.[3] The precipitated magnesium ammonium phosphate was ignited and the magnesium oxide calculated.

For silicic acid. The silicic acid present as the soluble salts of iron and aluminum was determined by evaporating the hydrochloric acid solution of the acid-soluble ash to dryness three times, finally filtering the desiccated silica, igniting and weighing.

Acid-Insoluble Ash.—For iron and aluminum. As small amounts of iron and aluminum frequently remain in the insoluble form as acid-insoluble ash, it was necessary to make a determination for the purpose of minimizing the error. The acid-insoluble ash was boiled with concentrated hydrochloric acid three times, the acid being evaporated each time. The filtrate was then treated as described above, the iron content being determined by titration with potassium permanganate solution and the amount of alumina obtained by difference. The percentages of iron and aluminum were then combined with the percentages obtained above to give the total result with reference to the air-dried material.

For silicic acid anhydride. The residue after treatment with concentrated hydrochloric acid was treated with sulphuric acid and hydrofluoric acid as described by Treadwell.[4] The percentage of SiO_3 so obtained was combined with that obtained in the acid-soluble ash.

For the sake of ready comparison the results reported above, also those obtained from the analysis with selective solvents, are herewith tabulated:

	Root.	Stem.	Leaf.	Bract.	Flower.	Seed.
Moisture content	4.00 p. c.	6.5 p. c.	7.3 p. c.	6.3 p. c.	3.0 p. c.	3.6 p. c.

Ash Determination.—The values given are the averages of the two determinations previously reported.

	Root, per cent.	Stem, per cent.	Leaf, per cent.	Bract, per cent.	Corolla, per cent.
Water-soluble ash	1.14	2.59	4.04	5.08	4.65
Water-insoluble ash	10.56	1.44	5.76	7.43	2.81
Total ash	11.70	4.03	9.80	12.51	7.46
Acid-soluble ash	3.04	1.39	4.59	4.30	1.79
Acid-insoluble ash	7.53	0.04	1.16	3.13	1.03

Inorganic Constituents.—In the following part of this tabulation, the amounts of elements and radicles were recomputed with reference to the absolutely dry mate-

[1] Treadwell and Hall, *Analytical Chem.*, Vol. II (1924), 519.

[2] *Ibid.*, page 86.

[3] *Ibid.*, page 78.

[4] *L. c.*, page 416.

rial, for any conclusions that may be drawn from these figures should be directly comparable and not subject to correction by the differences in the moisture contents of the several air-dried materials. The values recorded are the average of the two determinations previously reported.

	Root.	Stem.	Leaf.	Bract.	Corolla.
Ca	0.35 p. c.	0.20 p. c.	0.77 p. c.	0.63 p. c.	0.33 p. c.
Mg	0.074 p. c.	0.018 p. c.	0.13 p. c.	0.12 p. c.	0.062 p. c.
Fe	0.19 p. c.	0.050 p. c.	0.095 p. c.	0.11 p. c.	0.092 p. c.
Al	0.20 p. c.	0.049 p. c.	0.18 p. c.	0.15 p. c.	0.33 p. c.
Cl	0.30 p. c.	0.029 p. c.	0.032 p. c.	0.077 p. c.	0.017 p. c.
CO_3	0.026 p. c.	0.89 p. c.	1.45 p. c.	1.49 p. c.	1.78 p. c.
SO_4	0.15 p. c.	0.17 p. c.	0.71 p. c.	0.54 p. c.	0.19 p. c.
SiO_3	10.00 p. c.	0.87 p. c.	1.67 p. c.	4.26 p. c.	1.35 p. c.
Undetermined	0.90 p. c.	2.03 p. c.	5.53 p. c.	5.93 p. c.	3.54 p. c.

THALLIUM POISONING IN MIGRATORY BIRDS.

BY JUSTUS C. WARD.*

Since its introduction into the United States about 1920, thallium has been used with marked success in the control of injurious rodents. In areas where other poisons have failed to reduce the damage caused to ranchers and orchardists by these pests, thallium has proved highly effective. Thallium-poisoned grain is tasteless and the action of the poison is slow and insidious. There are no prompt warning features to limit acceptance, and rodents in most cases eat the entire bait-spots. In short, thallium is useful as a follow-up poison, but it is not a specific, that is to say, it will kill anything that eats it. Of recent years, thallium has been condemned as being responsible for losses of valuable species of birds and mammals.

A former publication (1) had to do with one phase of this problem, and it was definitely proved that thallium was wrongly blamed for sheep losses in the San Luis Valley in Colorado. The present investigation arose from a regrettable loss of wild geese around Yosemite Lake, California, found by investigators in that state to have been caused by thallium. The geese met their death from eating barley poisoned with thallium, which had been exposed by private individuals for a purpose not yet known.

References found in the literature (3) (4) relative to the toxicity of thallium to ducks or geese give no definite information relative to the toxicity to these birds of baits put out for Ground-Squirrels. The present investigations were undertaken to obtain this information. They were divided into: (1) Determination of the minimum lethal doses of thallium by intraperitoneal injection and by feeding; (2) observation of typical thallium death; (3) post-mortem observations; and (4) spectroscopic and chemical analyses.

Since no Canada geese were obtainable, female mallard ducks were used in all tests.

I. M. L. D. Studies: A. Intraperitoneal Injections.

* Associate Pharmacologist, Control Methods Research U. S. Biological Survey.

TABLE I.—MINIMUM LETHAL DOSE OF THALLIUM (AS SULPHATE)—IP—WILD DUCKS.

Duck No.		Dose.	Results.
1st Series	1	100 mg./Kg.	Died over night.
	2	75 mg./Kg.	Died over night.
	3	50 mg./Kg.	Died over night.
	4	35 mg./Kg.	Died in 63 hours.
	5	25 mg./Kg.	Survived.
	6	15 mg./Kg.	Died in 63 hours.
2nd Series	7	20 mg./Kg.	Survived.
	8	15 mg./Kg.	Survived.
	9	10 mg./Kg.	Survived.
	10	7.5 mg./Kg.	Survived.
	11	5 mg./Kg.	Survived.
3rd Series	12	35 mg./Kg.	Killed for analysis 48 hours.
	13	35 mg./Kg.	Died in 13 days.
	14	25 mg./Kg.	Killed for analysis 44 hours.
	15	25 mg./Kg.	Died in 13 days.

From this table it is seen that for intraperitoneal injection the M. L. D. is about 25 mg./Kg.

In about fifteen days ducks Nos. 5, 7, 8 developed a loss of feathers, which was confined completely to the small of the back just above the uropygial gland.

Ducks 9, 10 and 11 failed to show any unfavorable symptoms of any kind.

B. Feeding Tests.—To determine the acceptance of poisoned barley by ducks two separate tests were conducted. In the first of these, three ducks were caged together and fed 200 Gm. of the California thallium-poisoned barley, which contained 1800 mg. of thallium (as sulphate). There was no other feed in the cage. The three ducks had eaten only 45 Gm. of the feed in two days. At the end of that time two of them (Nos. 10 and 11) were dead. No. 9, the surviving duck, ate only 27 Gm. more feed in the period of nine days that elapsed before death. The three ducks ate a total of 648 mg. of thallium.

In the second acceptance test, duck No. 21 (Fig. 5) was given the choice of clean cracked corn or poisoned barley. A total of only 6 Gm. (54 mg. of thallium) of the poisoned feed was eaten in 12 days. Needing the bird for chemical analysis, on the thirteenth day, a total of 15 Gm. (135 mg. of thallium) more poisoned barley was forced down its throat. It was found dead on the second morning.

These tests indicate that even though other food is available, poisoned barley is slowly accepted by migratory birds in quantities sufficient to kill.

An additional test to determine more definitely the M. L. D. of thallium when fed to ducks in the form of the California poisoned barley gave the results shown in Table II. To be sure of the dose ingested these ducks were fed by force.

TABLE II.—M. L. D. OF THALLIUM (AS SULPHATE)—FED—WILD DUCKS.

Duck No.	Dose.	Results.
16	75 mg./Kg.	Dead over night.
17	50 mg./Kg.	Died in 12 days.
18	35 mg./Kg.	Survived.

These figures, together with those from the earlier feeding tests, indicate the M. L. D. of thallium for ducks to be about 50 mg./Kg. for this method of administration.

No. 18 also showed loss of feathers in the rump region at the end of three weeks.

II. Observation of Typical Thallium Death in Ducks.—Resembling closely symptoms in sheep, which have been described (1), thallium causes a marked gasping for breath because of the mucous clogging of the nasal passages, a profuse and green-colored diarrhea, a loss of accommodation, wabbly gait, and extreme

Fig. 1.—Ducks 13 and 15, ten days after injection.

Fig. 2.—Duck 7, twenty-five days after 20 mg./Kg. IP, showing area of depilation.

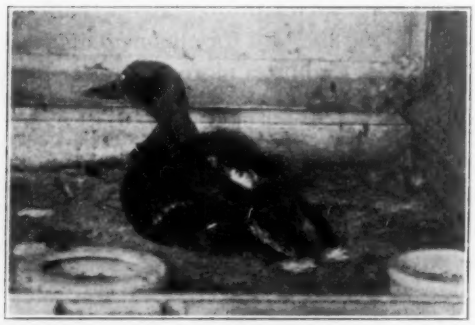


Fig. 3.—Duck 7, seventy-five days after 20 mg./Kg. IP.

Fig. 4.—Duck 5, five months after 25 mg./Kg. IP, showing new feather growth.

Fig. 5.—Duck 21, one day before death.

Observation of Typical Thallium Poisoning in Ducks.

exhaustion characterized by prostration on the floor of the cage, wings drooped, feet and legs fully extended, head and neck limp. This position is characteristic of coma, and with doses close to the M. L. D. it may persist for a couple of days before death. As death approaches the bird goes into intermittent asphyxial

spasms. Death is due to respiratory failure, and occurs within two hours after the spasms begin.

III. Post-mortem Observation.—The entire gastro-intestinal tract was plugged with a thick yellowish mucous.

Irritation and ulceration were present in the small intestine.

The gizzard was empty, but the lining was colored a light yellow.

The liver was enlarged and apparently degenerated (gross appearance of fatty degeneration similar to *P*), the tissue soft and filled with spots, and the gall bladder was distended with viscid fluid.

The kidneys were somewhat enlarged and of a dark purple color.

The lungs, heart, genital organs and other structures were normal, although excess fluid was usually found in the pericardium.

IV. Spectroscopic and Chemical Analyses.—In order to determine the distribution of thallium in the various parts of the bird these studies were conducted:

TABLE III.—ANALYTICAL RESULTS—THALLIUM IN DUCKS.

Duck No.	Total Tl ingested.	Time to death.	Organ analysed.	Total Tl found.	Spectroscope.
9	.....	11 days	Liver and kidneys	4.5 mg.	+
			GI tract	6.0 mg.	+
			Muscular tissue	4.0 mg.	+
10	.....	30 hours	Liver and kidneys	3.5 mg.	+
12	31.8 mg.	30 hours	Liver and kidneys	2.0 mg.	++
			GI tract	Trace	Faint
			Muscular tissue	Trace	Faint
			Blood, heart, lungs	.....	None
			Bones	.....	None
13	21.7 mg.	13 days	Liver and kidneys	1.9 mg.	+
14	22.8 mg.	44 hours	Liver and kidneys	2.6 mg.	+
			GI tract	2.0 mg	+
			Muscle	Trace	Faint
			Blood, heart, lungs	2.0 mg.	+
			Bones	None	?
15	27.8 mg.	13 days	Liver and kidneys	2.0 mg.	+
17	37.5 mg.	12 days	Liver and kidneys	None	+
			Heart and lungs	None	+
			GI tract	None	Faint
			Muscle	None	?
			Bones	None	None

In the chemical examinations, the method given by G. R. Lynch and J. M. S. Scovell for analysis of thallium in viscera (2) was used, it being found to be the one most free from objectionable features of any tried in this laboratory.

CONCLUSIONS.

1. The minimum lethal dose of thallium (as sulphate) to ducks when injected intraperitoneally is about 25 mg./Kg. When fed as poisoned barley it is about 50 mg./Kg. (The M. L. D. of phosphorus to ducks is quite variable, but death has occurred from 1 mg./Kg.)

2. Ducks will accept poisoned barley in lethal quantities.

3. Sublethal doses will cause loss of feathers in the area on the back just above the uropygial gland.

4. Thallium may be isolated from various structures of the body even when death is delayed for thirteen days.

5. Spectroscopic methods of analysis are much more sensitive than chemical ones.

6. Close supervision should be kept of all thallium used in rodent poisoning, and it should be employed only by trained men.

June 23, 1931.

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A STUDY OF THE BORNTRAEGER COLOR REACTION AND THERAPEUTIC ACTIVITY OF CASCARA SAGRADA.*

BY S. W. MORRISON.[1]

There is no satisfactory method to standardize or assay cascara preparations. As a consequence there is some variation in the therapeutic activity of the extracts on the market.

Considerable work has been done by Eaton (1), Fuller (2) and others in an effort to isolate the active ingredients, and to establish a reliable means of comparing the relative activity of different cascara products.

The Borntraeger reaction has been advocated as a means of standardizing fluidextract of cascara and has been utilized by Peter Valaer (3) and others (4) to make quantitative tests for cascara.

The Borntraeger test consists in extracting the ether-soluble constituents from the cascara preparation and developing a red color in the yellow ether solution by the addition of ammonia water. The depth of the colors is measured in a Lovibond tintometer against a suitable standard color.

Various solvents and methods have been used by Nitardy (5), and Milford Harris and Davy (6) to extract the active portion from the cascara bark. Attempts have also been made to obtain a potent preparation of cascara free from bitter taste and griping action.

It has been found also that cascara products vary greatly in the degree and shade of color produced with the Borntraeger test.

The object of the present investigation was to determine if the color tests for cascara sagrada parallel its therapeutic activity.

EXPERIMENT I.

Two hundred and fifty grams of ground cascara bark were extracted in a percolator with boiling water as directed in the U. S. P. X. The percolator was surrounded by a hot water jacket to retain the heat during the extraction.

* Laboratory of Pharmacology, University of Illinois College of Medicine, Chicago.

[1] Associate in Pharmacy.

Seven successive two-liter percolates were collected and evaporated on a water-bath to a volume shown in Table I, and alcohol then was added as a preservative. Following this, two four-liter portions were collected and concentrated. Percolation was stopped at this point as the percolate had only a pale straw color and did not darken on the addition of ammonia water (see Table I).

After the nine extractions (A) Table I, forty Gm. of the exhausted drug were boiled under a reflux condenser in a liter of 2% sulphuric acid for 90 minutes, neutralized with sodium hydroxide, concentrated on a water-bath and then extracted with ether and alcohol to separate the cascara extractive from the sodium sulphate. The ether-alcohol solution was evaporated to dryness and redissolved in 100 cc. of water. (No. 10, Table I.)

Another 40-Gm. portion (B) was boiled in a liter of water for one hour, filtered, and the filtrate evaporated to 100 cc. (No. 11 in Table I.)

Twenty grams of the exhausted drug B were then boiled with 500 cc. of 2% sulphuric acid for one hour, neutralized, filtered, extracted with alcohol, evaporated to dryness and redissolved in 50 cc. of water. (No. 12, Table I.)

The remainder of portion B (20 Gm.) was boiled with 500 cc. of water for one hour, filtered and concentrated to 50 cc. (No. 12A, Table I.)

The amount of color in each of these extracts was determined by using the tintometer, taking 2.2 as the yellow standard and 1.1 as the red standard for a U. S. P. fluidextract, following the method described by Peter Valaer (3).

TABLE I.—EXPERIMENT I.

A. Successive portions.	I. Liters percolate.	II. Cc. of concentrate.	III. % Strength. Yellow.	IV. Red.	V. Average %.	VI. Equiv. cc. U. S. P. fluidext.
1	2	160	126	131	128	208
2	2	40	30	34	32	12.8
3	2	40	31	30	30.5	12.2
4	2	40	14	16	15	6.0
5	2	30	19	18	18.5	5.5
6	2	20	10	10.5	10.2	2.1
7	2	20	13	16	14.5	2.9
8	4	20	8.8	8.7	8.75	1.7
9	4	20	8.8	9.2	9	1.8
10 acid decoct.	6.2	625	1.3	1.7	1.5	9.3
11 aq. decoct.	6.2	625	1.3	2.0	1.65	10.2
12 aq. decoct.	6.2	625	1.0	1.5	1.25	3.9
12A acid decoct.	6.2	625	1.1	1.8	1.45	4.5

NOTE: In portions 10, 11, 12 and 12-A the figures in Columns I and II represent the amount of percolate and concentrate that would have been obtained if the entire amount of original drug (250 Gm.) had been used.

The variations in the strengths of the percolates are probably due to the difference in time of extraction which sometimes resulted in a rise of strength higher in a later than in a preceding portion. Variations in the rate of percolation and the temperature of the water may also account for the slight irregularity. The concentration selected after evaporation was such that all the extractive matter would be held in solution and that the therapeutic activity might more nearly approach that of a fluidextract.

For the therapeutic tests, human subjects were used. They were placed on a normal diet which was not varied during the tests. Care was taken to make all tests at the same time of day and under exactly the same conditions.

TABLE II.—EXPERIMENT I.

The following table gives a condensed account of the therapeutic experiment.

Portions of percolate in order.	Color test % strength.	Dose cc. of sol. taken for therap. test.	Approx. equiv. of U. S. P. dose taken.	Therapeutic effect.	Date.
1	128	1.6	2	100% positive	2/7/31
	128	1.0	1.3	90 mild	2/20/31
	128	0.8	1.0	75	1/28/31
2	32	6.6	2	0	1/24/31
3	30.5	15	5	20 ?	1/10/31
4	15	13	2	0	1/8/31
5	18.5	22	4	10	1/19/31
6	10.2	29	3	0	
7	14.5	35	5	0	1/31/31
8	8.75	35	3	0	1/22/31
9	9	60	5	0	1/31/31

With percolate No. 1 the color index corresponded quite closely with the therapeutic effect. In all other following percolates, however, the therapeutic effect fell rapidly and with 100% of color no therapeutic effect was elicited.

In No. 4, corresponding to 200% color index, there was no therapeutic effect.

In No. 7, corresponding to 500% color index, there was no therapeutic effect.

In No. 9, corresponding to 500% color index, there was no therapeutic effect.

These are outstanding examples to which the others conform in varying degrees.

In No. 4, for example, two times the therapeutic dose was taken; this corresponds to twice the color of one therapeutic dose or 200%. In No. 9, five times the U. S. P. therapeutic dose was taken which corresponds to 5 times the color index.

EXPERIMENT II.

A 500-Gm. sample of powdered cascara bark was extracted (percolated) with 11 liters of boiling water and the percolate concentrated to 500 cc. Neither the Borntraeger reaction nor the therapeutic activity of this concentrate was determined since in Experiment I, a similar product possessed 100% activity. Subse-

TABLE III.

Successive portions.	Liters of percolate.	Concen. extract.	Equiv. U. S. P. dose.***	Equiv. of U. S. P. doses taken.	Therapeutic effect.*
1	11	500 cc.	Not tested	Not tested	Not tested
2	2	1.85 Gm.	0.3 Gm.	11	90% mild
3	4	3.43 Gm.	0.4 Gm.		
4	8	2.05 Gm.	0.7 Gm.	8.5	0
5	8	2.00 Gm.	0.8 Gm.		
**6 boiled	3	lost			
**7 boiled	2	1.6 Gm.	1.1 Gm.		

* The therapeutic effect given represents the average effect on all the subjects and not individual effects.

** In 6 and 7, the cascara was boiled with water, not subjected to percolation.

*** Amount equivalent, as determined by Borntraeger reaction, to one U. S. P. dose.

quent percolates as shown in Table III were evaporated to dryness; 0.5-Gm. samples of each dry extract were dissolved separately, each in 10 cc. of water and assayed for color index and therapeutic activity.

The results are tabulated on page 1278.

According to Table III, Nos. 2 and 3 combined, 1100% of color index gave 90% therapeutic effect.

Nos. 4, 5 and 7 combined, 850% color index gave no therapeutic effect. These tests show conclusively that cascara preparations may be prepared in which there is no relation between the color test and the therapeutic activity.

EXPERIMENT III.

The effect of different organic solvents on cascara bark was studied in an effort to determine the best solvent that will produce a fluidextract free from color and bitterness and still therapeutically active.

Powdered cascara bark was macerated three days with the organic solvent and the resulting solution concentrated to the strength of a fluidextract. The marc was then dried and percolated with boiling water by the U. S. P. method and a fluidextract prepared. The taste, color test and therapeutic activity were determined on each portion.

TABLE IV.

1st extraction.	Taste very bitter.	Color test.	Therap. activity.	2nd Extraction with boiling water.	Taste slightly bitter.	Color test.	Therap. activity.
		%	%			%	%
Alcohol		93	20	The marc		68	100
Acetone		63	20	from each		68	80
Ethyl Acetate		72y 38r	0	of the preceding, was		68	100
Chloroform		18	0	extracted		95	100
Ether		15	0	with water.		97	80
Benzene		9	0			100	90
Toluene		8	0			100	100
Benzine		4	0			107	75

NOTE: Regarding the color test: It is possible in some cases to obtain a color test of over 100. For example if one takes 100 Gm. and extracts it with a solvent, all of the color may pass into the solvent and all of the therapeutic activity remain in the marc, or again the solvent may extract more color than does water.

Alcohol, acetone and ethyl acetate apparently extract a therapeutically inert coloring principle as all the fluidextracts assay the same (68%) by color, but retain practically all their therapeutic activity.

EXPERIMENT IV.

A 50-Gm. sample of ground cascara bark was thoroughly extracted with five successive solvents, as follows: Benzine, ether, acetone, ethyl acetate, alcohol, and finally with boiling water. Acetone and alcohol extracted the most color. The fluidextract prepared from the marc with boiling water was only slightly bitter and assayed 13% by the color test. When administered to four different persons, it was found to be 100% therapeutically active.

EXPERIMENT V.

Alcohol (95%) was again used to extract ground cascara bark. Percolation was continued over a period of three weeks before the percolate was quite free from color. The alcoholic percolate was concentrated to represent 1 Gm. of bark per cc. The color test indicated a preparation 170 % as compared to the U. S. P. fluidextract. The therapeutic activity was about 40% of the U. S. P. fluidextract.

The bark was then exhausted with boiling water and a fluidextract prepared. The color test was 4%. The therapeutic activity was approximately 60%. The aqueous fluidextract thus prepared had only a slight bitterness.

EXPERIMENT VI.

A sample of cascara bark was percolated for three weeks with acetone. The acetone percolate was reduced to a volume corresponding to a fluidextract. The marc was then extracted with boiling water and an aqueous fluidextract prepared.

The acetone fluidextract assayed 131% by the color test and the therapeutic activity was estimated to be 75% to 90%. The aqueous fluidextract assayed 16% and had a therapeutic activity of about 50%.

Following table shows color and therapeutic results of Experiments IV, V and VI.

TABLE V.

1st extraction.	Taste bitter.	Color test.	Therap. activity.	2nd extraction.	Taste slightly bitter.	Color.	Therap. activity.
Mixture of organic solvents		Not tested	Not tested	With		13%	100%
Alcohol 3 weeks		170%	40%	boiling		4%	60%
Acetone 3 weeks		131%	75 to 90%	water		16%	50%

EXPERIMENT VII.

An attempt was next made to separate the active ingredients of cascara by salting out with different inorganic salts. The method of Diefenbach (7) was used. The fluidextract was evaporated to remove the alcohol and then saturated with sodium sulphate, allowed to stand several hours and then filtered. The filtrate was again saturated with sodium sulphate and the process repeated. A black, sticky, intensely bitter mass was removed by the sulphate. The precipitate was washed with sodium sulphate solution and to the combined filtrates were added $1^1/_2$ to 2 volumes of alcohol to precipitate the sulphate. The solution was filtered and concentrated under vacuum to the original volume.

When this fluidextract was assayed by the color test it was found to be only 3% strength, but when administered to three persons it was found to be about as active as the original fluidextract.

The precipitate from the sodium sulphate was dissolved in diluted alcohol and brought up to the volume of the original fluidextract. The Borntraeger test indicated a solution 181%. It had no therapeutic activity.

This specially prepared extract had very little bitter taste, and was very much lighter in color than the original fluidextract.

SUMMARY.

The Borntraeger color reaction does not in all cases run parallel with the therapeutic activity, and is not a reliable test for the presence or activity of cascara sagrada.

A more palatable preparation may also be prepared by first extracting the cascara with alcohol, acetone, etc. But in this case there is some loss of activity. A still more palatable and active preparation can be obtained by salting out of the bitter principle by sodium sulphate. The bitterness may be thus removed without markedly impairing the therapeutic activity of the cascara.

The color-producing principle is found almost entirely in the bitter resinous substance.

Further work is being done with other salts to determine their effect on fluidextract of cascara.

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THE SEED OF EUPHORBIA MARGINATA PURSH.*

BY LOYD E. HARRIS AND MARGARET C. GALLAGHER.[1]

An investigation of the literature on plants of the Euphorbiaceæ revealed the fact that the seeds of this family yield a comparatively large amount of a fixed oil (1) which has a decided medicinal value (2). Since *Euphorbia marginata* Pursh. grows in such abundance in this section of the country a determination of the quantity and properties of the oil yielded by this species appeared to be of exceptional value and it was with this purpose in view that the present investigation was undertaken.

It was the medicinal use of these plants which occasioned the name of the family, it being named after King Juba's physician, Euphorbium, who had cured Augustus Ceasar with the gum (3). Its therapeutic use at the time was in dropsy and distemper. Since then it has been applied in a number of different diseases (4), but its use has become obsolete. The oil of several species, however, has remained as a purgative.

Of the many species of Euphorbia which have been examined, *Euphorbia lathyris* has perhaps received the greatest attention. Various analyses (5) of this plant have yielded amounts of fixed oil varying from 35 per cent to 42 per cent. This oil resembles croton oil in physiological action (6). Some other species which have been examined are *E. helioscopia* (7), *E. pillulifera* (8), *E. drummondi* (9), *E. Cyparissias* (10), *E. platyphylla* (11) and *E. resinifera* (12). The oil content of these is sometimes as low as 14 per cent and the maximum amount is rarely above 40 per cent. They nearly all yield products which act powerfully as emetics and cathartics, and in overdoses occasion dangerous if not fatal pros-

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[1] Graduate Assistant, School of Pharmacy.

tration, with symptoms of inflammation of the gastro-intestinal mucous membrane (13).

The abundant literature on this family does not yield many references to *E. marginata* except that the milky acrid juice has been mentioned (14), and it has been suggested that the seeds were worthy of investigation (15).

EXPERIMENTAL.

The seeds were collected from September 22 to October 5, 1928, from plants which grew along ravines southeast of Norman, Oklahoma. They were dried in the sun, separated from seed pods and ground to moderate fineness.

Moisture determination made by the oven method gave the following percentages:

Weight of sample.	Percentage of moisture.
15.1165	6.1
6.3615	6.0
77.4246	6.3
5.4169	6.4
	Average 6.2

Ash determinations gave the following results:

Weight of sample.	Per cent of soluble ash.	Per cent of insoluble ash.	Total ash.
5.4169	0.48	3.71	4.19
7.4246	0.46	..	..
5.0012	0.56	3.40	4.00
5.0355	0.59	3.40	3.99

The first two samples were used in the moisture determinations.

Preliminary Analysis.—Two samples of 100 Gm. each were analyzed according to the method of Dragendorff (16) to ascertain in a general way the nature of the constituents extracted by each solvent and an indication of the amounts present. The samples were placed in a Soxhlet extractor and extraction with petroleum ether was continued until the percolate became colorless. The extract was oily in appearance, had a peculiar acrid, unpleasant odor, and an amber yellow color. It had a very low viscosity and a specific gravity of 0.914.

The ether extract was greenish yellow in color and as the solvent evaporated a white solid settled out, but it failed to show any definite structure when examined under the microscope.

The alcohol extract was a brown gummy substance which contained whitish, rosette crystals.

The drug residue was transferred to a conical percolator and extracted with distilled water. The extract was a dark brown, brittle solid, after the water had been evaporated, and had a very disagreeable odor.

The extraction was continued with a 2 per cent sodium hydroxide solution. The percolate did not have an alkaline reaction until approximately four liters of solvent had been added. When completely dry the extract was brown with white acicular crystals throughout.

The final extraction was made with a 2 per cent solution of hydrochloric acid but the amount extracted was almost negligible. It was dark brown in color and had no definite distinguishing characteristics.

The residue of the drug was removed from the percolator and dried. It was grayish brown and very light.

The amounts of the extracts are shown in the accompanying table:

Solvent.	Sample I.	Sample II.
Petroleum ether	30.4585	31.6605
Ether	0.6800	0.6248
Absolute alcohol	1.7092	1.9311
Water	2.3425	3.4290
Dil. NaOH (2%)	29.6850	29.0200
Dil. HCl (2%)	0.6000	0.6000
Unextracted residue	33.6000	35.3350

THE FIXED OIL.

The remainder of the ground seed (2110 Gm.), was placed in three conical percolators and extracted with petroleum ether as in the first extraction. By this process, 671 Gm. of oil were obtained, which was filtered through cotton to remove a slight sediment. The petroleum ether was removed by heating under reduced pressure. The specific gravity of the oil thus obtained was 0.909.

Physical Properties.—Fifty cc. of the oil were transferred to a distilling flask and steam distilled. Two cc. or 4 per cent of a water-insoluble liquid was present in the distillate. On account of its odor and boiling point (40–50° C.) this liquid was considered to be petroleum ether.

The remainder of the oil was then subjected to steam distillation, a heavy emulsion forming during the process. The distillate weighed 30.5767 Gm. and consisted chiefly of petroleum ether. There was, however, a small residue (2 cc.) of a yellow oil, which was not further investigated.

The emulsion was separated from the oil by decantation and washed with alcohol which "broke" it completely. The oil which separated was much clearer than the other oil and it was thought advisable to wash the total amount in a similar manner. The alcoholic layer, which was separated from the oil, had a very bright yellow color. After the recovery of the alcohol, 25 cc. of a yellow oil remained.

The small amount of alcohol left in the oil after washing was removed by distillation under reduced pressure. The following constants of the oil were determined: Sp. Gr. 0.9222; A. V. 7.76; S. V. 186; and I. V. 135.66.

The oxygen absorption of the oil was studied to determine whether it was a drying or non-drying oil. 0.1387 Gm. of the oil was weighed and placed in a protected place on Feb. 17th and weighed each day to determine its drying properties. Until March 1st no gain was noticed. After this time a gradual gain in weight occurred until March 13th at which time it weighed 0.1523 Gm. This represented an increase of 0.0136 Gm. It was weighed for several weeks after this but no loss or gain was noted.

Saponification.—203.5 Gm. of the oil were saponified with 130 cc. of a 25 per cent solution of sodium hydroxide in an autoclave for 1 hour at 15 lbs. (17). The soap was dissolved in water and extracted with ether to obtain the phytosterol, if any was present. 0.522 Gm. was obtained from the ether extract from which no crystalline substance, to indicate phytosterol, was obtained.

The acids were then liberated with dilute hydrochloric acid (1:1) and 185 Gm. were obtained. The I. V. was 139.51.

A second sample of 200 Gm. was saponified in the same manner. The acids obtained had an iodine value of 137.

THE FATTY ACIDS.

The first portion of the fatty acids was neutralized with alcoholic potassium hydroxide and precipitated with an aqueous solution of lead acetate. The solution was allowed to stand over night on ice. The lead soap was recovered and refluxed with ether for two hours and allowed to stand over night on ice. The ether-soluble portion was separated from the solid lead salts by decantation and each portion treated with dilute hydrochloric acid (1:1) to liberate the acids.

The ether was removed by distillation under reduced pressure from the ether-soluble portion which had an I. V. of 139 and the solid portion had an I. V. of 129. The second portion of acids was treated in the same manner. The I. V. for the liquid acids was 135 and for the solid acids, 69.

Identification of Liquid Fatty Acids.—Bromination Products. The bromination products were prepared according to the method given by Lewkowitsch (18). A precipitate of 4.7 Gm. formed, which after recrystallization from alcohol gave a melting point of 176–177° C. The ethereal filtrate was washed with a saturated solution of sodium thiosulphate to remove the excess bromine and the ether recovered by distillation. The residue was taken up with boiling petroleum ether, except a small amount which did not dissolve. This was separated and the liquid left at 5° C. for two hours. The residue gave a melting point of 176–177° and was considered to be the same as the first obtained. No further residue was obtained at the end of two hours.

THE OXIDATION PRODUCTS.

The oxidation products of the liquid fatty acids were prepared according to the method of Hazura and Grussner (19). There was a very slight precipitate which indicated the formation of dihydroxy-stearic or sativic acid in very small amounts.

The acid filtrate was neutralized with potassium hydroxide and boiled down to about half its original volume and acidulated with sulphuric acid. The precipitate, consisting of a brown flocculent mass, was dried by exposure to air and treated with ether, which dissolved out probably azelaic acid (20) and other secondary acidic products of oxidation.

The ethereal solution was evaporated and then recrystallized twice from water. Long, flat, needle-shaped crystals were obtained.

The ether-insoluble portion was crystallized from alcohol and then from water. The ether-soluble portion was extracted with alcohol and evaporated and tested for iso-linusic acid but no indication of its presence was found. The ether-insoluble portion, after extraction with alcohol, was extracted with water. The aqueous extract was evaporated and recrystallized twice. The crystals were rhombic plates which melted at 197° C., which indicated linusic acid, melting point 203° C. (21).

SEPARATION AND IDENTIFICATION OF THE SOLID ACIDS.

The methyl esters were prepared by the method of Read and Feng (22), 200 Gm. of the acids were refluxed with methyl alcohol (300 cc.) and 10 cc. of sulphuric acid for 10 hours.

The esters were fractionated at the following temperatures and pressures:

Temperature.	Pressure.	1st Fraction.	2nd Fraction.	3rd Fraction.
160–185	6 mm.	9.1 Gm.	.....	.....
185–189	2 mm.	.....	25.5 Gm.	.....
169–179	0.5 mm.	.....	.....	35.3 Gm.

The esters had a pale yellow color and the residue was a black, oily mass.

The second portion of the esters was redistilled, and collected at the following temperatures and at 0.5-mm. pressure.

Temperature.	Melting point.
140–178	35° C.
178–185	29–30° C.
185–189	Liquid

The esters were saponified by refluxing for fifteen minutes with alcoholic potassium hydroxide and the acids liberated from the soap by the addition of dilute hydrochloric acid (1:1).

The magnesium salt of the first fraction of the acids obtained from the redistilled esters was prepared by adding in succession, $^1/_{10}$ of the calculated amount of a neutral aqueous solution of magnesium acetate to the acids. The amount of magnesium acetate was calculated on the basis of pure stearic acid. Only four precipitates were collected and dried separately. The acids were liberated from the first two portions and the melting points determined as follows: No. 1, 56° C. and No. 2, 54° C. The last two portions were too small for further investigation.

The residue from the distillation of the esters was saponified with alcoholic potassium hydroxide and the solution neutralized with acetic acid and the lead soap formed by adding neutral lead acetate solution. The lead soap was extracted with ether. A very small amount of a fatty substance was obtained which appeared to be free unsaturated fatty acids.

The fatty acids were liberated from the lead soap with dilute hydrochloric acid (1:1) and the acids recovered and boiled with alcohol. The alcoholic solution which was dark brown in color was poured off and allowed to cool over night. A solid layer of acids formed on top of the solution and, after purification by recrystallization from alcohol, gave a melting point of 83° C.

SUMMARY.

Chemical analysis of the seed showed that they contained approximately 30 per cent of a drying oil in which the following acids were found: Linolenic, linolic, stearic, palmitic and a trace of oleic acid.

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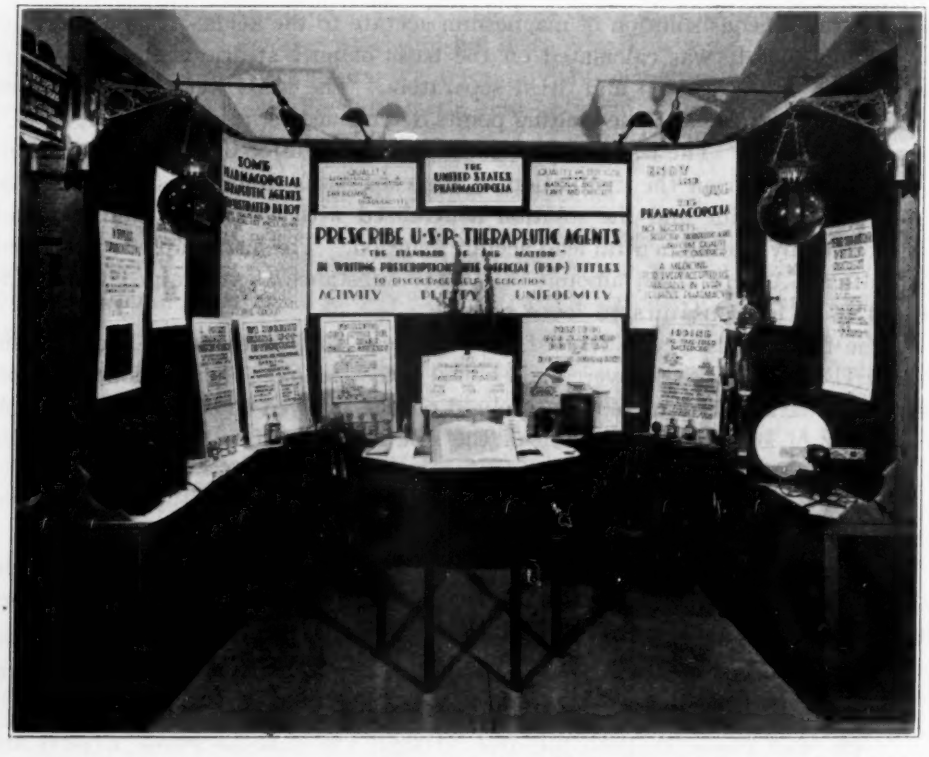

U. S. P. Exhibit at the meeting of the American Medical Association in Philadelphia, June 8–12, 1931.

STUDIES ON CEANOTHYN AS A BLOOD COAGULANT IN MAN.*

BY JOSEPH E. CONNERY, M.D., AND MARGARET H. TEWKSBURY, A.B.

Introduction.—A preliminary report of this work was published by the Council on Pharmacy and Chemistry (1) of the American Medical Association. The purpose of this paper is to give a detailed account of the investigation into the effectiveness of the oral administration of Ceanothyn as a coagulation-time depressant of human blood.

Material and Methods.—An account of the preparations used is given in the above report. Briefly, they were these: (1) coagulant Mixture A., which contained "fluidextract of wild cherry, 10 cc.; tincture of caramel, 10 cc.; spirit of cinnamon, 0.15 cc.; syrup enough to make 450 cc." (2) coagulant Mixture B., and (3) coagulant Mixture C. Mixtures B. and C. contained Ceanothyn. Until the preliminary report had been submitted, we were not informed as to the contents of the mixtures.

The subjects used in this study were divided into four groups: (1) received nothing; (2) received coagulant Mixture A.; (3) received coagulant Mixture B.; (4) received coagulant Mixture C. The subjects of the groups were members of the laboratory staff and patients on the wards of the Third (New York University) Medical Division, Bellevue Hospital.

The diagnoses of the patients were as follows: chronic lymphatic leukemia; alcoholic polyneuritis; *diabetes mellitus;* acute catarrhal jaundice; pernicious anemia; chronic myelogenous leukemia; duodenal ulcer; Banti's disease; *dermatitis exfoliativum;* rheumatoid arthritis; ulcerative colitis, non-specific; tabes dorsalis; acute epidemic cerebrospinal meningitis; rheumatic heart disease, active; carcinoma of liver; Hodgkin's disease; Henoch-Schönlein's purpura; acute lymphatic leukemia; thrombocytopenic (idiopathic) purpura; luetic anemia; polycythemia vera; lymphosarcomatosis; chronic ulcerative pulmonary tuberculosis; acute rheumatic polyarthritis.

The methods used for determining the coagulation time were (1) the capillary glass-tubing method; (2) the method of Lee and White. Conditions were standardized in that the same end-points were used throughout, the temperature was maintained constant and the same observer made all the readings of a single test. Taylor (2) used the capillary tube method described by Payne in most of his human subjects and an adaptation of the method of Howell in a series of rabbits for comparison. According to the method used, the subjects were grouped as follows: capillary glass-tubing method—40 subjects, 39 of whom had simultaneous, duplicate determinations, giving a total of 79 complete sets of determinations; method of Lee and White—16 subjects, all of whom had simultaneous, duplicate determinations, giving a total of 32 complete sets of determinations.

The coagulant mixtures were given, undiluted, and by mouth after making control, simultaneous, duplicate determinations. The details of dosage and of time of administration are given in the tables.

Results and Conclusions.—Vomiting occurred three times: cases 19, 27 and 47, after the patients had received 30, 60 and 90 cc., respectively, of the coagulant

* From the Department of Medicine, University and Bellevue Hospital Medical College, New York University, and the Third (New York University) Medical Division, Bellevue Hospital.

mixtures. (See tables.) Excepting the vomiting and rarely a feeling of nausea, no toxic symptoms were noted even when doses of 120 cc. were used.

The results are given in Tables I, II, III and IV. From a study of these data it is quite obvious that the results of the coagulation time determinations in those patients who received no coagulant mixture and those who received coagulant Mixture A. (no Ceanothyn) and the patients who received Ceanothyn (coagulant Mixtures B. and C.) are quite comparable.

From these results we can adduce no proof that the oral administration of Ceanothyn decreases the clotting time of blood in man.

TABLE I.

Coagulant Mixture A.		Coagulation Time in Minutes and Seconds (Capillary Tube Method).							
			Time Elapsed after Control Determination.						
Case number.	Determination.	Control.	15 min.	30 min.	45 min.	60 min.	75 min.	90 min.	105 min.
1	I	5′10″*	5′00″	6′00″	6′05″	5′00″			
2	I	8′10″*	7′10″	6′25″	2′50″	1′50″			
	II	8′15″	4′50″	4′40″	3′30″	2′10″			
3	I	3′40″*	4′00″	2′45″	3′00″*	4′00″	2′30″	2′45″	
	II	2′30″	3′20″	3′45″	3′30″	3′30″	2′10″	3′15″	
4	I	3′45″†	2′30″	3′00″	2′35″	2′40″	3′10″		
	II	5′00″	2′45″	2′30″	2′15″	2′20″	2′20″		
5	I	5′00″†	3′00″	4′30″	4′00″	4′45″	4′00″		
	II	5′00″	3′15″	4′30″	3′40″	4′30″	3′30″		
6	I	3′00″†	3′05″	3′10″	3′05″	3′10″			
	II	2′40″	2′45″	2′30″	2′45″	2′40″			
7	I	5′20″†	4′20″	5′20″	4′20″†	2′10″	3′10″	3′20″	
	II	5′00″	3′30″	5′10″	3′20″	2′20″	2′50″	2′50″	
8	I	4′40″†	3′35″	4′15″	3′40″†	3′50″	3′50″	4′25″	
	II	3′40″	3′15″	3′55″	3′10″	2′50″	3′10″	4′15″	
9	I	4′00″*	3′50″	6′00″	2′30″*	4′15″*		4′00″*	4′00″
	II	4′20″	3′20″	6′30″	3′00″	4′30″		3′45″	4′50″
10	I	4′50″†	3′45″	5′20″	3′40″	4′10″	3′30″	3′15″	
	II	3′50″	4′45″	4′00″	2′30″	3′30″	3′00″	2′35″	
11	I	5′35″*	5′50″	5′50″*	5′30″	4′25″*	6′10″	4′35″*	5′20″
	II	6′15″	4′50″	5′20″	5′30″	3′55″	5′30″	3′35″	4′00″
12	I	2′30″*	3′45″	3′00″*	4′15″	2′25″*	3′35″	2′50″*	2′40″
	II	2′05″	3′25″	2′00″	3′25″	2′05″	2′55″	2′00″	2′10″
13	I	4′40″*	4′40″	3′20″*	4′10″	3′54″*	3′00″	3′40″*	3′25″
	II	4′10″	5′00″	2′40″	3′30″	3′40″	2′10″	3′10″	3′05″
				No Mixture.					
14	I	4′25″	4′10″	3′55″	2′30″	2′55″	2′45″	4′20″	2′50″
	II	3′55″	3′10″	3′15″	2′10″	2′35″	3′05″	4′00″	2′40″
15	I	4′14″	4′15″	4′25″	4′45″	4′20″	4′00″	4′35″	4′35″
	II	3′20″	3′55″	3′55″	4′25″	3′30″	3′30″	4′05″	3′55″
16	I	4′55″	4′30″	4′50″	3′50″	4′10″	3′50″	4′00″	4′05″
	II	3′45″	3′20″	2′50″	2′30″	3′50″	2′30″	3′20″	2′55″
17	I	5′30″	4′25″	4′20″	4′00″	4′40″	4′14″	3′55″	2′50″
	II	4′00″	3′25″	2′50″	3′00″	3′20″	2′40″	3′05″	2′20″
18	I	6′20″	4′30″	4′50″	4′05″	4′45″	4′45″	3′50″	4′20″
	II	5′20″	3′20″	4′20″	3′25″	3′45″	3′05″	3′10″	3′30″

I and II are determinations done as nearly simultaneously as was possible from a single skin puncture. * and † signify the administration of 15 and 30 cc., respectively, of a coagulant mixture. The mixture was given immediately after taking the samples of blood.

TABLE II.

Coagulant Mixture B. Coagulation Time in Minutes and Seconds (Capillary Tube Method).

Case number.	Determination.	Time Elapsed after Control Determination. Control.	15 min.	30 min.	45 min.	60 min.	75 min.	90 min.	105 min.
19	I	3′00″*	3′30″	3′00″*	3′15″	*	3′10″	*	3′40″
	II	2′40″	3′00″	2′30″	3′00″		3′30″		3′30″
20	I	5′15″*	4′00″	3′25″*	2′30″	2′25″*	2′00″	2′20″*	2′00″
	II	4′15″	3′40″	3′15″	2′45″	2′45″	2′10″	2′00″	1′00″
21	I	3′45″*	3′20″	4′20″*	3′20″	4′40″*	3′00″	*	4′10″
	II	3′25″	2′40″	3′20″	3′10″	4′30″	2′50″		3′30″
22	I	3′40″*	3′40″	3′40″*	4′20″	4′15″*	3′50″	4′30″*	4′00″
	II	2′50″	4′10″	3′20″	4′30″	3′55″	3′40″	3′40″	4′16″
23	I	3′20″*	3′10″	4′10″*	3′05″	4′05″*	4′55″	3′40″*	3′10″
	II	3′00″	3′00″	4′00″	2′45″	3′25″	3′55″	3′20″	3′20″
24	I	6′15″*	5′20″	6′10″*	3′05″	4′25″*	4′15″	4′20″*	3′55″
	II	5′15″	4′40″	5′10″	3′15″	5′25″	2′35″	3′10″	2′45″
25	I	6′30″*	6′10″	6′35″*	6′50″	6′10″*	5′30″	7′15″*	9′10″
	II	5′30″	4′50″	5′15″	5′40″	5′50″	6′00″	6′30″	8′50″
26	I	3′10″*	2′30″	2′40″*	3′15″	2′46″*	3′30″	2′40″*	3′20″
	II	2′00″	2′10″	2′20″	2′45″	2′10″	2′50″	2′10″	3′10″
27	I	4′50″*	3′10″	2′25″*	2′30″	4′40″*	3′20″	3′10″*	3′10″
	II	4′20″	3′20″	2′15″	2′10″	3′50″	3′00″	2′50″	4′10″
28	I	4′00″*	3′00″	4′20″*	3′10″	3′46″*	3′40″	3′55″*	4′25″
	II	3′40″	2′20″	3′50″	2′50″	3′30″	3′00″	3′35″	2′45″
29	I	3′45″*	3′40″	4′05″*	4′24″	3′40″*	3′50″	3′10″*	3′00″
	II	3′25″	3′54″	3′55″	4′00″	2′30″	2′50″	2′00″	2′00″
30	I	5′15″*	3′15″	3′40″*	4′30″	3′55″*	4′50″	3′55″*	3′15″
	II	4′55″	3′00″	3′00″	4′10″	3′15″	4′00″	3′05″	3′05″

I and II are determinations done as nearly simultaneously as was possible from a single skin puncture. * and † signify the administration of 15 and 30 cc., respectively, of a coagulant mixture. The mixture was given immediately after taking the samples of blood.

TABLE III.

Coagulant Mixture C. Coagulation Time in Minutes and Seconds (Capillary Tube Method).

Case number.	Determination.	Time Elapsed after Control Determination. Control.	15 min.	30 min.	45 min.	60 min.	75 min.	90 min.	105 min.
31	I	4′20″*	5′35″	4′25″*	4′30″	3′53″*	3′50″	4′35″*	5′25″
	II	4′00″	4′35″	3′55″	4′00″	3′15″	3′10″	5′45″	4′25″
32	I	4′20″*	4′10″	3′50″*	4′00″	4′00″*	3′50″	3′50″*	3′40″
	II	3′50″	4′00″	3′30″	4′20″	3′40″	4′10″	4′10″	3′30″
33	I	7′30″*	6′35″	4′00″*	5′40″	3′10″*	6′50″	4′45″*	5′25″
	II	5′00″	4′35″	3′40″	5′10″	2′50″	6′30″	3′45″	4′05″
34	I	4′20″*	3′35″	3′50″*	3′35″	3′40″*	5′00″	4′30″*	4′00″
	II	3′50″	3′55″	3′30″	2′25″	3′30″	4′00″	3′50″	4′20″
35	I	3′15″*	2′50″	4′50″*	3′10″	3′45″*	2′25″	2′45″*	3′25″
	II	3′05″	2′40″	4′30″	3′00″	3′25″	2′15″	3′05″	3′15″
36	I	5′55″*	5′30″	6′40″*	6′50″	6′20″*	6′25″	6′00″*	7′10″
	II	4′15″	4′10″	5′50″	6′20″	5′50″	5′55″	5′30″	6′50″
37	I	3′30″*	4′05″	4′05″*	4′05″	4′55″*	3′40″	4′05″*	4′10″
	II	3′40″	3′05″	4′15″	3′05″	4′35″	3′30″	3′35″	3′10″
38	I	6′50″*	5′10″	5′40″*	6′20″	6′05″*	5′10″	6′50″*	4′50″
	II	8′20″	5′30″	5′10″	6′40″	6′25″	4′20″	7′20″	4′00″
39	I	4′30″*	4′10″	4′15″*	3′50″	4′55″*	5′15″	4′15″*	4′00″
	II	3′30″	3′50″	4′05″	3′40″	4′45″	3′45″	3′30″	3′30″
40	I	4′00″*	3′50″	3′20″*	4′40″	4′05″*	3′50″	3′50″*	3′20″
	II	3′00″	2′50″	2′50″	3′10″	2′55″	2′50″	2′30″	2′30″

I and II are determinations done as nearly simultaneously as was possible from a single skin puncture. * and † signify the administration of 15 and 30 cc., respectively, of a coagulant mixture. The mixture was given immediately after taking the samples of blood.

TABLE IV.

No Mixture. Case number.	Determination.	Coagulation Time in Minutes and Seconds (Lee and White Method). Time Elapsed after Control Determination. Control.	15 min.	30 min.	45 min.	60 min.	75 min.	90 min.	105 min.
41	I	7′00″	9′00″	7′30″	5′00″	2′45″	5′35″	10′00″	
	II	5′00″	11′00″	5′30″	5′00″	2′55″	4′30″	12′00″	
42	I	7′00″	6′00″	8′00″	6′30″	12′35″	10′30″	14′00″	
	II	7′10″	10′00″	8′15″	7′00″	6′40″	11′00″	11′00″	
43	I	9′00″	9′00″	9′30″	16′10″	12′15″	9′30″	11′45″	
	II	7′10″	13′10″	16′45″	13′15″	8′00″	6′10″	5′15″	
44	I	8′00″	6′00″	5′00″	6′50″	9′30″	8′50″	5′00″	
	II	10′00″	8′00″	5′10″	6′00″	9′10″	8′40″		
45	I	5′00″	11′20″	10′30″	7′50″	7′20″	4′50″	5′30″	6′30″
	II	10′50″	6′10″	8′30″	6′10″	8′00″	5′00″	9′30″	10′45″
46	I	9′00″	8′15″	8′15″	10′10″	9′15″	10′00″	11′50″	
	II	8′30″	7′15″	7′15″	9′00″	8′25″	5′00″	9′10″	
				Coagulant Mixture A.					
47	I	10′ †	5′00″	14′30″†	11′30″	13′00″†	11′20″	7′00″†	8′00″
	II	12′00″	10′30″	11′00″	18′00″	16′30″	9′40″	10′00″	12′00″
48	I	5′00″†	7′00″	5′00″†	4′00″	4′00″†	3′30″		
	II	5′10″	9′00″	5′10″	4′30″	4′20″	4′00″		
49	I	15′00″†	5′30″	6′00″†	5′00″	5′00″†	7′00″		
	II	12′10″	10′50″	6′20″	8′10″	5′00″	8′30″		
50	I	9′00″†	10′30″	6′00″	7′00″	11′00″			
	II	8′30″	7′45″	7′30″	13′30″	6′30″			
				Coagulant Mixture B.					
51	I	18′00″†	11′00″	†	9′30″	10′00″†	7′00″	14′00″	
	II	19′30″	12′30″		8′30″	7′30″	11′00″	12′00″	
52	I	13′00″†	8′40″	10′00″†	9′00″	7′20″†	3′00″	5′00″†	9′00″
	II	13′00″		11′00″	11′00″	9′00″		2′20″	9′00″
53	I	5′30″†	5′30″	10′00″†	6′20″	5′00″	9′30″		
	II	7′00″	4′00″	6′30″	6′20″	5′10″	8′20″		
				Coagulant Mixture C.					
54	I	6′10″†	5′30″	4′00″†	3′35″	4′00″†	2′00″		
	II	6′20″	5′10″	4′50″	4′20″	4′00″	2′00″		
55	I	6′00″†	7′00″	12′30″†	7′00″	5′00″†	5′10″		
	II	8′00″	6′00″	5′00″	7′00″	5′10″	7′00″		
56	I	8′00″†	6′00″	10′00″†	12′00″	8′00″†	8′10″		
	II	8′00″	6′00″	10′00″	10′00″	8′00″	8′20″		

I and II are determinations done as nearly simultaneously as was possible from a single venar puncture. † signifies the administration of 30 cc. of a coagulant mixture. The mixture was given immediately after taking the samples of blood.

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SOME OBSERVATIONS ON VIOSTEROL AND COD LIVER OIL.*

BY E. O. PRATHER,[1] MARTHA NELSON[2] AND A. RICHARD BLISS, JR.[3]

INTRODUCTION.

In 1922 McCollum, Simmonds, Becker and Shipley (27) found two vitamin factors in cod liver oil, one of which was destroyed by aeration. Up to that time it was thought that there was but one fat-soluble vitamin, and that deficiency of that vitamin was responsible for both rickets and xerophthalmia. These investigators showed that the factor which is destroyed by aeration is the one which prevents xerophthalmia, and that the process does not modify the influence of cod liver oil on the calcification of bone. They showed further that olive, cottonseed, maize and sesame oils possessed neither of these vitamin factors. Steenbock and Nelson (47) reported during the following year work which confirmed the presence of two factors in cod liver oil, and the results of their work were accepted as proof that cod liver oil contains two vitamins.

Hume's (24) study of the effects of radiation with the mercury-vapor quartz lamp convinced him that light could be substituted for vitamins. Steenbock and Nelson (47) drew the same conclusions. Steenbock, Nelson and Black (48), in 1924, demonstrated that a diet complete except for vitamins A and D caused cessation of growth before the appearance of xerophthalmia, and stated that irradiation of the animals results in stimulation of growth. During the same year the irradiation of animals, foods and oils with the mercury-vapor quartz lamp attracted world-wide attention, and stimulated much investigation and research. Steenbock and Black (42) demonstrated that irradiated lard and olive oil develop an antirachitic factor.

In 1925 Green and Mellanby (13) showed that fat-soluble vitamin A acts as a protective against infection, that many common infections occur in animals when there is a deficiency of this substance in the diet, and that no other vitamin can be substituted for fat-soluble vitamin A, which is essential to normal growth and which is apparently a factor in resistance to infection.

Steenbock, Hart, Hoppert and Black (46) demonstrated that irradiated milk was more effective and rapid as an antirachitic agent than direct irradiation of the animal, that irradiation destroyed fat-soluble A in butter, but does not destroy water-soluble B in yeast or C in lemon juice. Zilva (53) had made practically the same observations six years earlier (1919). During the same year cottonseed and linseed oils, cholesterol (35, 38, 43), phytosterol (18), yeast, commercial casein, oxbile, lanolin, grains, starch, flour and breakfast foods were added to the list of substances which could be made antirachitic by irradiation. It was demonstrated also that this antirachitic property was not produced in pure protein, carbohydrate or fat, or in such substances as salts, water, ether, phloroglucin or paraffin hydrocarbons (44).

Rosenheim and Webster (35), in 1926, proved that cholesterol failed to become antirachitic if it was first subjected to further purification. During the preceding

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[1] Instructor in Pharmacology, University of Tennessee.

[2] St. Louis Children's Hospital.

[3] Chief, Division of Pharmacology, University of Tennessee.

year it had been suggested, on the basis of spectroscopic examinations (41, 44), that the acquired antirachitic property of cholesterol was dependent upon the presence of an impurity. Rosenheim and Webster found that irradiated ergosterol was protective in doses of 1 mg., and that cholesterol, under identical conditions, required 5 mg. to produce equivalent effects. Thus, irradiated ergosterol became the most potent antirachitic substance known. The same workers found that over-irradiation destroyed the provitamin, and that irradiated ergosterol, kept for one and one-half years in an inactive oil, was still potent when tested in daily doses of $^1/_{10,000}$ mg.

Hess and co-workers (16, 19–22) expressed the opinion that ergosterol is the impurity in cholesterol which is activated by irradiation, and that it is the only sterol which thus far has been made antirachitic by irradiation. Rosenheim and Webster (37), in 1927, demonstrated that the lowest protective dose of irradiated ergosterol is from $^1/_{10,000}$ to $^1/_{20,000}$ mg. per day.

The disagreeable odor and taste of cod liver oil have stimulated efforts to find a substance equally efficacious but more palatable. As a result there are in the market to-day, available to both the medical profession and the laity, many brands of flavored and "tasteless" cod liver oils and sugar-coated tablets of cod liver oil, and more recently, irradiated ergosterol, known by the trade-name "Viosterol." Because of the vagueness, or the indirectness, or the lack of clarity of some manufacturers' statements concerning irradiated ergosterol or "Viosterol," there has been a growing belief among pediatricians, physicians in general, pharmacists, nurses and the laity that this substance is a concentrated, acceptable and complete substitute for cod liver oil, and it is enjoying, consequently, an increasing popularity as a "substitute for cod liver oil." Although aware of the facts that cod liver oil contains two vitamins, and irradiated ergosterol but one, the average physician is better acquainted with the antirachitic vitamin, and is likely to disregard the importance of fat-soluble vitamin A and its less obvious influence on the child's ability to resist infections. Because of this increasingly wide-spread idea and the resulting popularity of irradiated ergosterol as a "substitute for cod liver oil," and the fact that there is no available comparative literature on the subject, this investigation was carried out in an effort to obtain some practical, comparative data illustrating the effects of such substitution.

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THE PROCEDURE.

Pure bred albino rats, obtained from the Sprague-Dawley Corporation, Madison, Wisconsin, were used as the experimental animals. The rats were provided with fresh tap water daily, and with as much diet as they would consume. Young rats were weaned when three weeks old, and were not placed on a purified diet until after their weight exceeded 30 Gm. The experimental animals were weighed on alternate days and were carefully watched for signs on any abnormalities. They were housed in individual cages designed and made by E. O. Prather, Jr. Each cage was kept over a pan of pine shavings at a sufficient height to prevent access to the shavings. The cages were cleaned every day, and the shavings renewed on

alternate days. No bedding of any kind was provided in order to avoid the possibility of the rats obtaining vitamins from such sources. The animals were kept in a well-lighted and ventilated room at a temperature range of from 60° to 75° F.

The *stock diet* used was a modification of that employed by Bethke, Steenbock and Nelson (1). It consisted of:

Powdered whole milk	40.0 parts
Wheat, finely ground	37.5 parts
Yellow corn, finely ground	37.5 parts
Soy beans, finely ground	15.0 parts
Crude casein	5.0 parts
Dried spinach	5.0 parts
Yeast*	5.0 parts
Iodized table salt	0.5 part
Calcium carbonate	0.5 part

* If this is reduced one-half, the diarrhea often observed in female rats after the birth of first litters is corrected.

The *purified diet* employed was a modification of that used by Yudkin and Lambert (52). Crisco was substituted for lard since the latter at one time had been reported to contain small amounts of fat-soluble vitamins. The purified diet consisted of:

Casein, extracted	18%
Osborne and Mendel salt mixture	4%
Crisco	20%
Cornstarch	58%

To prevent waste, water was added to make a paste. This diet is complete in proteins, calories and mineral salts, but deficient in all vitamins.

The crude casein was freed from fat-soluble vitamins by extraction (Soxhlet extractors) first for 24 hours with 95% alcohol, then for 24 hours with a mixture of equal parts of 95% alcohol and anesthetic ether, and finally for 48 hours with anesthetic ether. It was found that this extraction procedure is superior to that of Daniels and Loughlin (6) in that no lumping occurred. Crisco is freed from all fat-soluble vitamins by the process of hydrogenation (9). Commercial cornstarch is also free from fat-soluble vitamins (9).

The salt mixture of Osborne and Mendel (31) consists of:

Calcium carbonate	134.8000 Gm.
Magnesium carbonate	24.2000 Gm.
Sodium carbonate	34.2000 Gm.
Potassium carbonate	141.3000 Gm.
Phosphoric acid	103.2000 Gm.
Hydrochloric acid	53.4000 Gm.
Sulphuric acid	9.2000 Gm.
Citric acid plus HOH	111.1000 Gm.
Iron citrate plus $1^1/_2$ HOH	6.340 Gm.
Potassium iodide	0.0200 Gm.
Magnesium sulphate	0.0790 Gm.
Sodium fluoride	0.2480 Gm.
Potassium and aluminum sulphate	0.0245 Gm.

The acids were mixed, the salts then added using sufficient distilled water to facilitate mixing, and the mixture was finally evaporated to dryness at 90° C. and reduced to a fine powder.

The cod liver oil and the irradiated ergosterol used were secured from the same manufacturing house. Since the irradiated ergosterol used was reported to be one hundred times the antirachitic vitamin D potency of good cod liver oil (34), it was diluted one hundred times with olive oil, which does not contain any fat-soluble vitamins (27). Vitamin B was supplied in the form of powdered yeast.

Osborne and Mendel (31) reported that animals receiving an insufficiency of vitamins or a complete deficiency of fat-soluble vitamins soon lost their appetites and refused to eat. In these cases the vitamin-containing substances had been mixed with the food in definite proportion, and it was assumed that the animals would consume a definite quantity of food daily. Simmonds, McCollum and Becker (40), Jones (26) and Hopkins (23) found that if large quantities of food are mixed at one time for future use, a part of the vitamin content is destroyed through oxidation due to the iron content of these mixtures. To overcome these possible influences all of the vitamin-containing fluids were placed directly in the mouths of the animals by means of a graduated pipette; a definite quantity of yeast was weighed, diluted to a known volume with water and a measured quantity of this fluid was placed into the mouth of each animal daily; and the diets were mixed in sufficient quantities to last a period of one week.

When the young rats had reached a weight of 30 Gm. or more, they were divided into groups, each group, whenever possible, composed of an equal number of males and females.

The first group of rats was placed on *Diet B*, consisting of the purified ration and 80 mg. of yeast daily (32, 33). After these animals had begun to develop xerophthalmia, the diets of some of them were modified. Some were given $^1/_5$ drop of cod liver oil daily, in addition to Diet B, and $^1/_2$ drop of irradiated ergosterol, this being designated as *Diet Bb*. This quantity of cod liver oil cures xerophthalmia, but has little effect on bone. Others were given $^1/_2$ drop of cod liver oil only, in addition to Diet B; this constituted *Diet Bc*. The remainder of the rats were left on the original experimental diet, *Diet B*, which consisted of the purified ration, 80 mg. of yeast, and $^1/_2$ drop of irradiated ergosterol daily. After xerophthalmia developed, one-half of the animals were given $^1/_2$ drop of cod liver oil daily, in addition to the irradiated ergosterol (*Diet Da*). The rest of this group were kept on their original diet (*Diet D*) during the remainder of the observations.

TABLE I.—FIRST SERIES, DIETS B, D, C.

Diet.*	B.	D.	C.
Number of rats on the diet	18	15	15
Average days on the diet	62.1	55.6	54.4
Average wt. in Gm. at beginning of observations	47.7	47.0	46.3
Average wt. in Gm. at end of observations	55.1	58.2	80.6
Average gain per rat in Gm.	7.4	11.2	34.2
Average days to xerophthalmia	41.3	55.6	..

* *Diet B*: Purified food plus 80 mg. of yeast daily. *Diet D:* Purified food plus 80 mg. of yeast and one-half drop of irradiated ergosterol daily. *Diet C:* Purified food plus 80 mg. of yeast and one-half drop of cod liver oil daily.

The third group of rats was placed on *Diet C*, composed of the purified ration, 80 mg. of yeast, and $^1/_2$ drop of cod liver oil daily.

The rats were killed and autopsied at the close of the periods of observation. The intestines, spleen, liver, kidneys, heart and lungs were examined for gross abnormalities. The left front and the right rear legs of each animal were severed, and roentgenograms were made. The heads were severed and dissected transversely and smears were made of the nasal sinuses.

None of the first series of animals had grown as had been expected, and some had lost hair and become bald in spots. Harris and Moore (15) believe this condition is caused by a deficiency of the vitamin B complex. Accordingly, a second series of studies was made, and the yeast increased to 1 Gm. per animal per day. The observations in the cases of the first series with the cod liver oil were satisfactory, so it was deemed unnecessary to repeat these observations. As a further test of irradiated ergosterol half of the animals receiving no fat-soluble vitamins (*Diet B*) were given $^1/_2$ drop of irradiated ergosterol after they had developed xerophthalmia (*Diet Ba*).

All of the rats used in the second series of observations had been raised on the same stock diet as the first series, the young were weaned at the same age and the animals were treated throughout in the same manner with the noted exceptions.

OBSERVATIONS AND DISCUSSION.

For a time the increase in weight of the three groups of rats (*Diets B, D* and *C*) were parallel, then the weights of the animals which received no fat-soluble vitamins (*Diet B*), and of those which received irradiated ergosterol (*Diet D*), became practically stationary. The weights of the rats which received cod liver oil (*Diet C*) continued at a regular rate of increase throughout the period of observation. The irradiated ergosterol animals (*Diet D*) gained very little more than those which received no fat-soluble vitamins (*Diet B*). These results seem contradictory to those of Steenbock and Nelson (47) who reported that direct irradiation of the animals or the feeding of irradiated goods stimulate the growth. However, these results are in accord with the observations of Hume (24), and of Goldblatt and Soames (12). The rats which received cod liver oil (*Diet C*) gained three times as much as those which received irradiated ergosterol (*Diet D*) during the 60-day period of observation.

All of the animals which received no cod liver oil (*Diets B* and *D*) developed xerophthalmia within an average period of about 40 days (Table I). The condition of the rats which received irradiated ergosterol (*Diet D*) was more severe than in the case of the group which received no fat-soluble vitamins (*Diet B*). Hume (24) reported similar results.

All of the external symptoms presented by the animals which had been kept on *Diets B* and *D* were absent in the rats which had been fed *Diet C* (cod liver oil). It is obvious, therefore, that these groups (*B* and *D*) were suffering from a deficiency of fat-soluble vitamin A, for, in addition to the xerophthalmia, it was noted that the weights of these animals became stationary for a few days or declined rapidly following the development of xerophthalmia, unless some treatment, *i. e.*, fat-soluble vitamin, was administered. Similar observations, in the absence of fat-soluble vitamin A or in low vitamin A diets, have been reported by Cramer, Drew

and Mottram (4), Steenbock, Sell and Nelson (49), Steenbock and Nelson (47), Wohlbach and Howe (50, 51), Davis and Outhouse (7), Coward (3), Hume and Smith (25), Sherman and Cammock (38), Steenbock, Nelson and Black (48), Daniels, Armstrong and Hutton (5), Bloch (2), Sherman and Munsell (39), and Halliday (14).

To test further the effects of irradiated ergosterol and of cod liver oil on the growth and the eye condition, rats which had developed xerophthalmia on Diet B (no fat-soluble vitamin) were given 1/5 drop of cod liver oil and 1/2 drop of irradiated ergosterol (*Diet Bb*) daily. These animals showed no appreciable gain in weight, although the xerophthalmia was cured in about 6 days. When 1/2 drop of cod liver oil was administered daily (*Diet Bc*), the xerophthalmia was cured in about the same length of time as with *Diet Bb*, but there was a noticeable increase in the rate of growth (Table II). Some of the animals which had been receiving only irradiated ergosterol (*Diet D*) were given 1/2 drop of cod liver oil daily in addition to the irradiated ergosterol (*Diet Da*). The xerophthalmia was cured in about six days, as with the other animals, and there was some increase in the weights of these animals (Table III).

TABLE II.—FIRST SERIES, DIETS BB, BC, B.

Prather, Nelson, Bliss.

Diet.*	Bb.	Bc.	B.
Number of rats on the diet	5	4	5
Average gain in wt. (Gm.) 10 days before treatment	0.5	0.7	0.6
Average gain in wt. (Gm.) on treatment	4.5	14.9	4.4
Average days to cure xerophthalmia	5.6	5.4	...
Average days' treatment	9.5	24.5	...

* *Diet Bb:* Purified food plus 80 mg. of yeast daily. After xerophthalmia developed, 1/5 drop of cod liver oil and 1/2 drop of irradiated ergosterol daily. *Diet Bc:* Purified food plus 80 mg. of yeast daily. After xerophthalmia developed, 1/2 drop of cod liver oil daily. *Diet B:* Purified food plus 80 mg. of yeast daily.

TABLE III.—FIRST SERIES, DIETS D, DA.

Prather, Nelson, Bliss.

Diet.*	D.	Da.
Number of rats on the diet	4	4
Average gain in wt. (Gm.) 10 days before treatment	0.2	1.2
Average gain in wt. (Gm.) on treatment	...	4.2
Average days to cure xerophthalmia	...	5.2
Average days treated	...	13.4

* *Diet D:* Purified food plus 80 mg. of yeast daily and 1/2 drop of irradiated ergosterol daily. *Diet Da:* Purified food plus 80 mg. of yeast and 1/2 drop of irradiated ergosterol daily; after xerophthalmia developed, 1/2 drop of cod liver oil daily.

Autopsy disclosed some marked differences in the conditions of the several groups of experimental animals. The rats which had been fed no fat-soluble vitamins (*Diet B*) showed a marked inflammatory condition of the lungs, the spleen and the liver were discolored, and in the majority of cases, were shrunken and infiltrated with fat, and the intestines were thin-walled and filled with gas. In some

cases the intestines displayed a dull brown color, but in others the inflammation was so intense that the color was almost red. In most instances abcesses had appeared at the base of the tongue, and these often extended over the entire posterior portion of the tongue.

The animals which had been on *Diet B* (no fat-soluble vitamin) but had had their diets modified *after the development of xerophthalmia* (*Diets Bb* and *Bc*) showed a few differences on autopsy from those which had remained on *Diet B* for the entire period of observation. The rats which had been fed *Diet Bb* ($^1/_5$ drop of cod liver oil and $^1/_2$ drop of ergosterol) presented practically the same appearance as in the cases of the *Diet B* rats. Those rats which had been fed *Diet Bc* ($^1/_2$ drop of cod liver oil) showed a less marked intestinal inflammation. It appeared that, once an appreciable decline in weight had started, the administration of relatively small quantities of fat-soluble vitamin A was of little benefit.

The rats which had been on *Diet D* ($^1/_2$ drop of irradiated ergosterol) disclosed, on autopsy, all of the changes exhibited by the animals which had received *Diet B* (no fat-soluble vitamins). In some of the animals the conditions were even more severe than in those which had received no fat-soluble vitamins. This was particularly true of the intestinal conditions. The animals which had received $^1/_2$ drop each of cod liver oil and of irradiated ergosterol (*Diet Da*), *after they had developed xerophthalmia*, showed some slight improvement over those which had received irradiated ergosterol only (*Diet D*). Here, too, it was evident that, after the weight had become stationary or had begun to decline, the addition of small quantities of fat-soluble vitamin A to the diet accomplished little toward increasing resistance to infection.

TABLE IV.—SECOND SERIES, DIETS B, D, C.

Prather, Nelson, Bliss.

Diet.*	B.	D.	C.
Number of rats on the diet	8	14	13
Average days on diet	57.2	58.1	48.6
Average wt. in Gm. at beginning of observations	41.8	38.3	37.5
Average wt. in Gm. at end of observations	73.6	88.5	169.5
Average gain in wt. (Gm.) per rat	31.8	50.2	132.0
Average days to xerophthalmia	43.8	44.9	...

* *Diet B:* Purified food plus 1 Gm. of yeast daily. *Diet D:* Purified food plus 1 Gm. of yeast and $^1/_2$ drop of irradiated ergosterol daily. *Diet C:* Purified food plus one Gm. of yeast and $^1/_2$ drop of cod liver oil daily.

All of the rats which had received *Diet C* (purified food plus 80 mg. of yeast and $^1/_2$ drop of cod liver oil daily) were normal. In every case there were large deposits of intraperitoneal fat visible, the intestines contained no gas, and there were no signs of intestinal inflammation. There were no indications of shrinkage of the liver or of the spleen, nor was there any fatty infiltration. None of these animals had developed xerophthalmia. Not a single abscess was found on the tongues of these animals. These observations are in agreement with the findings of Mori (29, 30), McKay (28), McCollum, Simmonds, Becker and Shipley (27), Steenbock and Coward (45), Steenbock, Sell and Nelson (49), Drummond (8), Bloch (2), Daniels, Armstrong and Hutton (5), Steenbock and Nelson (47), Coward (3),

Sherman and Cammock (38), Steenbock, Nelson and Black (48), Sherman and Munsell (39), Wohlbach and Howe (50, 51), Davis and Outhouse (7), and Halliday (14).

None of these observations verify the findings of Emmet and Allen (10), and Cramer, Drew and Mottram (4), who reported that no pathological changes were found in rats when fed diets which were deficient in fat-soluble vitamin or in which this vitamin was entirely absent.

In 1923 Daniels, Armstrong and Hutton (5), and Halliday (14) reported accumulations of pus in the nasal sinuses of rats on diets deficient in fat-soluble vitamin A. In the same paper Daniels and her co-workers reported snuffles in their animals. The observations herewith reported do not verify the latter findings of Daniels. With but two exceptions, one in the first series of animals and another in the second series, there were no audible or visible signs of difficult breathing. However, this may be explained, possibly, by the marked difference in the ages of the animals, and the differences in the degree of purity of the rations used in this work as compared with those employed by Daniels and co-workers. Unfortunately the smears from the first series of animals reported herewith were unsatisfactory and had to be discarded.

As already stated, the rats in the first series of these observations did not grow as had been expected, and some had lost hair and had become bald in spots. Harris and Moore (15) believe this condition is due to a deficiency in the vitamin B complex. In the second series of observations the yeast was increased to 1 Gm. per day, and this hair condition did not occur. The animals were very fond of the yeast, and eagerly consumed the paste composed of yeast and water which was placed in the food containers.

TABLE V.—SECOND SERIES, DIETS B, Ba.

Prather, Nelson, Bliss.

Diet.*	B.	Ba.
Number of rats on the diet	4	4
Average gain in wt. (Gm.) 10 days before treatment	9.3	9.0
Average gain in wt. (Gm.) on treatment	10.9	6.1
Average days treated	..	9

* *Diet B:* Purified food plus 1 Gm. of yeast daily. *Diet Ba:* Purified food plus 1 Gm. of yeast daily. After xerophthalmia developed, $^1/_2$ drop of irradiated ergosterol daily.

TABLE VI.—SECOND SERIES, DIETS B, D, C.

Prather, Nelson, Bliss.

Diet.*	B.	D.	C.
Number of rats on the diet	8	14	13
Number of rats showing pus in the nasal sinuses	5	9	0
Number of rats showing abscesses on the tongue	6	8	0

* *Diet B:* Purified food and 1 Gm. of yeast daily. *Diet D:* Purified food, 1 Gm. of yeast, and $^1/_2$ drop of irradiated ergosterol daily. *Diet C:* Purified food, 1 Gm. of yeast, and $^1/_2$ drop of cod liver oil daily.

With the exception of a higher growth rate the external appearances of all of the animals of the second series (Table IV) were in accord with those of the first

series. The growth of the animals which had received no fat-soluble vitamins (*Diet B*) was stunted, and the hair was rough and coarse. Evans and Burr (11) reported that on highly purified diets the growth of their animals was stunted, but the animals remained normal physiologically, had glossy coats and appeared to be in the best of health. Their observations are not confirmed by this investigation, although the diets used were purified to the same degree as those employed by Evans and Burr. The appearance of the animals which had received *Diet D* (irradiated ergosterol) differed very little from those which had received no fat-soluble vitamins (*Diet B*). The animals on *Diet C* (cod liver oil) presented a normal appearance. Their fur was smooth and glossy, their posture was better than either of the other groups and they appeared very active and in perfect health. With the exception of the degree of xerophthalmia, it was difficult to distinguish between the rats which received *Diet B* (no fat-soluble vitamins), and those which received *Diet D* (irradiated ergosterol).

The gain in the weights of the animals of the second series was about five times greater than in the animals of the first series. The appearance of xerophthalmia occurred also in about 40 days (Table IV). Since it was demonstrated very satisfactorily and conclusively in the first series that cod liver oil will stimulate the growth and cure the xerophthalmia, it was deemed unnecessary to repeat that part of the experimentation. To test further the effects of irradiated ergosterol on the growth rate and on the xerophthalmia, half of the animals which had been fed *Diet B* (no fat-soluble vitamins) were given $^1/_2$ drop of irradiated ergosterol daily, *after they had developed xerophthalmia*. Again no improvement was observed in xerophthalmia; if anything, the condition appeared to have become somewhat aggravated and more severe. The growth was not stimulated, and, as a matter of fact, the rats which had been on *Diet B* (no fat-soluble vitamins) gained more than those which had been fed *Diet Ba* (irradiated ergosterol) (Table V).

In the cases of the rats which had received *Diet D* (irradiated ergosterol) there was no prolongation of the average time to the appearance of xerophthalmia (Table IV). However, the condition was much more severe and the decline in weight much more rapid than in the animals which had been fed *Diet B* (no fat-soluble vitamins).

The rats which had been fed *Diet B* (no fat-soluble vitamins) and those which had received *Diet D* (irradiated ergosterol) for a period of 40 days began to lose the complete use of their hind legs. This was followed by the loss of the use of the front legs, in some cases. The condition presented the appearance of rickets, for the animals which could walk at all showed a peculiar "flat footed" gait and were irritable. The rats which had received *Diet C* (cod liver oil) did not develop this condition. It is obvious, therefore, since the only differences in the three diets were in the cod liver oil and the irradiated ergosterol contents, that cod liver oil contains some essential factors which are essential to growth, the prevention of infections and the cure and prevention of xerophthalmia, and that these factors are lacking in irradiated ergosterol.

On autopsy all of those animals in the second series which had received *Diet B* (no fat-soluble vitamins) and all of those which had been fed *Diet D* (irradiated ergosterol) showed all of those conditions which had been found in the animals of the first series. In most cases these conditions were more severe. Six of the eight

rats which had been fed *Diet B*, and eight of the fourteen animals which had received *Diet D* exhibited abscesses at the bases of the tongues (Table IV). In some cases the abscesses were spread over the entire posterior half of the tongues.

The smears of the nasal sinuses were examined by J. A. McIntosh, M.D., Pathologist to St. Joseph's Hospital, Memphis. He reported (Table VI) that five of the eight rats which had received no fat-soluble vitamins (*Diet B*), and nine of the fourteen animals which had been fed irradiated ergosterol (*Diet D*) showed accumulations of pus in the nasal sinuses. In no case was pus found present in the nasal sinuses of the rats which had received $^1/_2$ drop of cod liver oil daily (*Diet C*). With the two exceptions noted above, no snuffles developed.

The roentgenograms showed that the degree of calcification in all of the rats which had received *Diet D* (irradiated ergosterol) was greater than that exhibited by the animals which had been fed *Diet B* (no fat-soluble vitamins), but the rats which had been on *Diet C* (cod liver oil) showed the greatest degree of calcification. Since irradiated ergosterol has been reported, by manufacturers, to possess 100 times the antirachitic potency of cod liver oil, and the irradiated ergosterol which was used in these experiments was diluted 100 times with an inactive oil, the degree of calcification attending the administration of irradiated ergosterol should have been the same as that produced by cod liver oil. These observations indicate, however, that the administration of irradiated ergosterol in quantities which are theoretically equivalent to the vitamin D potency of cod liver oil does not result in a calcification of the bones comparable to that produced by the administration of cod liver oil.

SUMMARY.

The purpose of this study was to compare irradiated ergosterol or "Viosterol" and cod liver oil in a practical way.

The animals in each litter were divided into three groups of two animals each, one male and one female when possible, were placed on the purified diets, and the vitamins added. All of the animals received a quantity of yeast which was sufficient to promote growth when the other vitamins were present. The vitamins, in all cases, were placed directly in the animals' mouths.

Three diets were used, the first, *Diet B*, consisted of the purified ration, with yeast; the second, *Diet D*, consisted of the purified diet or ration, yeast, and $^1/_2$ drop of irradiated ergosterol daily; the third, *Diet C*, consisted of the purified ration, yeast, and $^1/_2$ drop of cod liver oil daily.

The quantity of irradiated ergosterol administered was reputed to contain the same antirachitic potency as the cod liver oil. However, this amount of irradiated ergosterol did not produce bones as well calcified as did the cod liver oil.

The animals which received no fat-soluble vitamins (*Diet B*) and those which received irradiated ergosterol (*Diet D*) developed all the reported symptoms of a fat-soluble vitamin A deficiency. The animals which received cod liver oil (*Diet C*) did not show any abnormalities.

CONCLUSIONS.

1. When animals are fed a purified diet adequate in proteins, inorganic salts, calories and vitamin B, they grow well for a short time, then the weight becomes stationary or falls off rapidly, and xerophthalmia develops. The upper respiratory

tract becomes inflamed; the liver and spleen become discolored, shrunken and infiltrated with fat; the kidneys become sand-colored; and the intestines are found to be thin-walled and filled with gas. In some cases the stomach, as well as the entire intestinal tract, are badly distended. There is no visible intraperitoneal fat present. The intestines vary in color from dull brown to a degree of inflammation which is almost red. The amount of calcium deposited in the bones is very small.

2. The addition of irradiated ergosterol ("Viosterol") to a diet like the foregoing increases the calcification of the bones, but does not prevent or cure the xerophthalmia, or increase the growth of the animal. Instead, the xerophthalmia appears to be aggravated, although it does not develop earlier. The condition of the upper respiratory tract is not improved, the intestines, kidneys, spleen and liver are found to be fully as bad, if not worse than the conditions found when no irradiated ergosterol is given.

3. The addition of cod liver oil to the foregoing (see 1. on page 1300) diet results in excellent growth of the animals, a better calcification of the bones, increased deposition of body fat, normal respiratory tracts, and the liver, kidneys, spleen and the intestines are found to be normal.

4. Irradiated ergosterol ("Viosterol"), therefore, did not demonstrate the power to stimulate growth and development of the body and vital organs, or to prevent infections of the upper respiratory tract, or to produce the same degree of calcification and growth of the bones as did cod liver oil.

5. Since "colds," malnutrition and intestinal inadequacies are more frequent in children than rickets, this study emphatically suggests that the apparently widespread substitution of irradiated ergosterol ("Viosterol") for cod liver oil in the diet of the child is not logical, and may result in an appreciable decrease of the child's strength and resistance to infections.

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LANTERN SLIDES.

Science is quoted in the following by P. E. Reid: "The advantages of a quick method for preparing lantern slides which may be simply done and without the usual cost are especially valuable in the case of taking diagrams from a text or journal, or for producing necessary slides on short notice.

"I have found the following preparation to have the above qualifications and to be very effective. Take a plain glass lantern slide, thoroughly clean it and allow to dry. When the slide has become quite dry apply a thin coat of albumin from a fresh egg and again allow the slide to dry. A smooth brush is essential in getting the coat of albumin evenly placed to avoid a streaked appearance.

"As soon as the albumin has completely dried, place the plate with its coated side uppermost, over the diagram or other copy, and trace on the slide with India ink. The width of the lines may be varied by using pens of different sizes. Colored effects may be added in the same manner except that inks made from aniline dyes (such as the common writing fluids) should be used. The pigmentation in colored India inks make them all appear black.

"Mount in the usual manner after the ink has dried by placing the newly made plate face down on another clean slide and fastening together with the usual lantern slide material or with adhesive tape.

"These slides are not temporary as might be supposed but may be left in the lantern for long periods of time without injury in spite of the intense heat of some lanterns. I have used this preparation for the past five years and it is now being used by others."

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Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

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RAW GLANDS FOR MANUFACTURE OF PHARMACEUTICALS AND CHEMICALS HAVE LARGE DEMAND IN GERMANY.

There is a considerable demand for fresh raw glands in Germany. Thyroid and ovary glands are most in demand although pituitary, testes, thymus, hypophysis, suprarenal, corpora, lutea, orchia and others are of importance in the trade. The United States is a leading source of raw gland importations. Raw animal glands are imported in the frozen state. In some cases they are shipped in special air-tight tin containers. Obviously it is of the utmost importance that the packing be adequate to insure the arrival of the glands in an entirely fresh and perfect condition. It is understood that there are large specialized storage warehouses in Hamburg from which deliveries to the consumers can readily be made. A list of German importers and consumers of raw glands is available in the Chemical Division to accredited American firms upon request. (Consul General W. L. Lowrie, Frankfort-on-the-Main.)

A Merry Christmas and a Happy New Year!

IODINE RETENTION AND DISTRIBUTION.*

BY WILLIAM A. PEABODY.

TABLE I.

Rabbit.	Body Wt., Kg. Init.	Final.	Approx. dose mg. I_2/Kg./day.	Period, Days. I_2 fed.	After feeding.	Total I_2 fed Gm.	Iodine Distribution. Gamma/100 Gm. Dry Basis. Liver.	Skeleton muscle.[1]	Lung.	Brain.	Misc.[1]	Mg. eliminated.	Retention % of I_2 fed.	Remarks.
1	..	1.20	16+	69	2	2.45	233	320	4940′	371′	H 397′ G 550′	...	..	Slight liver infection
C-1	2.27	2.32	16−	69	2	2.45	570	134	820	147	H 518 B 1470 G 86′	...	..	Healthy
3	..	0.91	28	38	..	0.96	7770	216′	...	121′	.....	...	..	Died; loss of appetite
C-3	1.05	0.76	28+	38	1	0.96	2650′ (max.)	691	3310′	1035′	.....	...	..	Emaciated; skin (ear) infected; many liver spots
4	..	1.20	12+	54	2	1.49	5010	146′	224′	None?	H 121′	766	49	Skinny; liver inf.
C-4	2.38	2.38	12−	54	3	1.49	432	458	259	112	.....	749	50	Liver inf.
5	1.45	1.39	19	9	4	0.25	1050	181	501	527	H 518′	76	70	
C-5	1.52	1.46	19	9	4	0.26	1080	259	552	552	H 1140′	127	52	Coccidiosis
6	1.15	1.09	39	9	4	0.40	4830	483	6350	648	H 4660′ K 13300 (min.)	125	69	
C-6	1.31	1.37	39	9	4	0.46	2120	691	17800	518	H 3380′ K 9200	186	60	Coccidiosis (?)
8	2.42	2.40	2.1	9	4	0.046	207	147	164	216	H 164′ K 216 G 389 B 264	6.5 10.2	86 79	
C-8	2.51	2.33	2.1	9	4	0.048	242	224	216	164	H 224 K 268 B 156			
7	1.72	1.78	2.5	9	4 7″ 9″	0.039	...	...	...	...	.....	23.1 1.6 0.5	41 37 34	
C-7	1.51	1.59	2.5	9	4 7″ 9″	0.034	...	...	...	...	....	21.5 1.1 0.6	37 33 32	
9	1.64	1.65	5.4	9	4	0.079	...	...	...	...	.....	21.7	73	Pregnant; delivery 2 days after end of exp.
C-9	2.93	2.71	5.4	9	4	0.141	...	...	...	...	.....	51.3	64	

* See article in June JOURNAL A. PH. A. (1931), pages 551–555. This table was omitted by oversight from the paper appearing in the issue of the JOURNAL above referred to.

[1] H = Heart. G = Gall bladder with bile. B = Whole blood, wet basis. K = Kidneys. ′ = Single analysis. ″ = Consecutive additional days.

THE DEVELOPMENT AND EXAMINATION OF A CITRUS FRUIT.*

BY F. J. GOODRICH AND L. METZGER.

The lemon, orange, grapefruit and lime are all members of the genus Citrus. There are a number of varieties from each of these different species and each presents a marked difference in appearance, composition and taste. Although grown in a tropical or sub-tropical climate, the fruits are transported to all parts of the world. Their consumption in this and most other countries has been increasing rapidly for many years, and the public has come to think of them as indispensable to their needs.

Since the characteristics, composition and structure of the lemon and the grapefruit as well as other recognized species of the Citrus group are well known it was deemed of interest to investigate: *first*, the fruits produced by crossing the lemon with the grapefruit, and *second*, by selection of the best cuttings from their grafting to improve upon the fruits first developed.

The investigation has been carried on since 1923 at which time a lemon-grapefruit graft was obtained from a Seattle floral garden. The young plant was about eighteen inches high and was placed in the University of Washington green house. One fruit was borne in 1924, three in 1925 and two in 1926, after which the plant ceased to bear fruit. Several cuttings were taken from a fruiting branch in 1925. All grew vigorously but only one mature fruit was produced.

A cutting was obtained from a fruiting branch in 1926. The first fully developed and ripened fruit from this plant was obtained in 1929 at which time the cutting was eight inches above ground. Two more were obtained in 1930 and the height of the young tree fifteen inches. At the present time it stands twenty-three inches above ground.

The mature and ripened fruit has a characteristic lemon-grapefruit color, but instead of being oval as the lemon or globoid as the grapefruit it is distinctly pear-shaped. It is devoid of the pointed nipple-shaped summit of the former, but has the characteristic rounded base of the pomelo. The average weight of the fruit is between one and one and one-half pounds. The texture of the fully developed, ripe product is firm and solid, much more so than the grapefruit.

The fruit is a hesperidium with from ten to twelve locules and about four or five seeds in each of these segments. The rind is rough, thick and leathery, the surface being of a deep yellow color. Like the other members of the citrus group it consists of epicarp, hypoderm and outer mesocarp.

The epicarp cells range from fifteen to twenty mm. in diameter and are fairly thick-walled. The oil cavities in the outer layers are small, most of them less than one millimeter in diameter and are more numerous than in most lemons or grapefruits. The hypoderm cells present a heavy outline and vary from forty to sixty mm. in diameter, while the spongy parenchyma of the mesocarp are large cells with numerous intercellular spaces. The endocarp surrounding each locule is tough and membranous and becomes parchment-like on drying.

The citric acid content of the juice varied from 2.69% to 2.95% which is less than average for the lemon but more than for that of the grapefruit. The total acidity ran considerably higher but was due to other acidous components besides

* Scientific Section, A. PH. A., Miami meeting 1931.

the citric acid. The juice when sweetened and diluted has a pleasing flavor, quite a different taste from the two fruits closely related to it.

A comparison of the fruit obtained from the original graft, between the years 1924 and 1926, and those from cuttings from this graft (1929–1930), show marked development. *First*, an improvement in the texture was observed. The pulp was not so hard and firm and the club-shaped vesicles of the segments were softer and more succulent. The pulp of the fruit gave a greater yield of juice. *Second*, the product from the more recently developed plant produced a thinner covering for the fruit, although the outer yellow rind appeared to be just as thick and heavy. It may, therefore, be concluded, since the juice and outer rind constitute the most important components of the citrus fruits, progress has been made in improving the character of this more recently developed fruit.

It is hoped and expected that continued improvement will be noted from work in progress and from experimentation of the products from selected cuttings.

National Formulary Exhibit, at the Meeting of the American Medical Association in Philadelphia, June 8–12, 1931.

CHARLES S. SARGENT MEMORIAL.

In honor of the late Charles S. Sargent, for many years director of the Arnold Arboretum, Harvard University, a memorial arch will be erected across Center St., Jamaica Plain, near the Arboretum.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor will also undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

ADVERTISING AND SELLING PROBLEMS IN DRUG STORES.

Store Layout and Arrangement—Continued.

Prescription compounding and similar professional services of pharmacy distinguish retail pharmacies from all other retail stores. This professional service, which retail pharmacies are equipped and qualified to render, gives pharmacists both privileges and responsibilities. No opportunity should be lost to acquaint drug store patrons with them.

In the layout and arrangement of drug stores this unique position of retail pharmacy creates opportunities which should not be disregarded. For instance, in the comparatively few locations in which strictly professional drug stores can be established, it is obvious that the appearance and atmosphere of the store should be such as to impress customers with the character, responsibility and experience inherent in its pharmaceutical services.

Side lines of merchandise are, however, a necessity in the operation of most drug stores in the United States. Without the additional revenue produced by these side lines, many communities would be deprived entirely of pharmaceutical service, because drug stores devoted exclusively to professional pharmacy could not obtain a sufficient volume of business in such places.

These side lines in drug stores should be so placed and arranged, however, that they do not interfere with that fundamental characteristic which all who enter a drug store should recognize instantly—here is a store equipped and able to render the professional services of pharmacy.

In the creation of such an impression, drug store layout may take the following form. On one side of the store can be grouped the prescription counter and sick-room and other medicinal supplies which are usually to be found only in drug stores. The other side of the store can be devoted to the so-called side lines, ranging all the way from perfumes and cosmetics to candy, soft drinks and the so-called sundries and novelties. Drug stores laid out in this manner enforce some separation of their patronage so that people waiting for prescriptions do not interfere with those selecting face powder. Yet the complete service of the store can be observed at a glance by all who come in.

While a complete separation of the business of a drug store into these two fundamental divisions is not always practical, it is of the utmost importance, in my judg-

* Lecturer on Business, Columbia University and Philadelphia College of Pharmacy and Science.

ment, to recognize that in store layout, the more closely this idea is approached, the greater the advantage.

No line of merchandise should be emphasized or even included in the drug store's stock which will result in the destroying or interfering with its recognizability as a drug store. The vaudeville jokes about drug store merchandising result almost entirely from a violation of this basic principle. These violations don't help the stores which are guilty and they tend to decrease the public understanding and appreciation of the services of all retail pharmacists.

Variations in the demand for the various classes of merchandise sold in drug stores result not alone from the type of the community in which the store is located. One of the most important additional causes of variations in demand is the seasonal changes. No druggist needs to be reminded how important they are. Rubber bathing caps occupy prominent display space in many drug stores in June and July. Their display in the same space in January would be, of course, an absurdity except, perhaps, in south Florida and in the extreme southern part of California.

That exception illustrates something very important: seasonal variations, just like sectional variations in demand, must be determined individually by each drug store. A druggist in Miami Beach, for instance, may find of all the months in the year, the first two weeks in January are the most effective in which to display bathing caps.

It is dangerous to trust the memory, however, as to what merchandise sells best at various times of the year. Between this January and next the Miami Beach druggist above will have made many displays and, in addition, will have had many other business and professional problems occupying his time and attention. Under these conditions, it is only natural that in January 1933, he might forget about his success the preceding year in the sale of bathing caps in the first two weeks of the month.

There is a sure, simple way to determine and record the effectiveness of displays of merchandise in drug stores at different times of the year. This can be done with an inexpensive diary. On the day a test showing is started, a brief description of it is written in the diary, including the amount and kind of merchandise shown, the space occupied and its position in the store.

Most important of all, how effective was the display? Was it worthwhile and, therefore, is it worth repeating at that time the next year?

Fortunately, there is a simple way to obtain answers to these questions. An aisle table for instance, is piled high, immediately after Christmas, with bars of castile and other superior soaps. Is the use of this space at that time justified for this purpose? To get the answer to this vital question, for his future guidance, all a druggist needs to do is to put on the cash register nearest this display a card and promise himself and instruct all his assistants that every time a sale of any item so displayed is made, a tally will be recorded on the card.

The simple record of the number of sales made of various classes of merchandise shown will create a sufficiently accurate record to permit a determination of the ways to use most effectively, at various times of the year, the selling space in the store.

The number of sales made from that particular display is, of course, recorded with the other information about it in the display diary. After a year or two a drug-

gist who faithfully maintains such a diary soon will have created for himself an exceedingly accurate record of what to display to produce the most sales at all times of the year.

It is a fact, mentioned previously in this series of articles, that people do not enter drug stores in important numbers just to look around and shop. When they come in they have a definite purchase in mind. Confirmation of this fact is afforded by observations which show that practically all purchases made in a drug store are of a single item. Occasionally displays or personal recommendation of sales people will cause these customers to buy additional merchandise and the gain from these sales are welcome additions to a store's profits. However, the fact that people entering a drug store usually go directly to the department in which they are interested makes less important the grouping of related lines of merchandise than is the case in department stores or variety stores, for example.

On the other hand, the various classes of merchandise in drug stores should be so placed that one class will not interfere with the sale of the other. That is the purpose behind the suggestion earlier in this outline—that the professional departments of a drug store should be grouped on one side of the store. Care should be taken, also, in the grouping of the so-called side lines so as not to put merchandise of too dissimilar a nature close together. Obviously, for instance, insecticides and candy should not share the top of a case nor should dog foods be displayed on the back bar of the soda fountain.

Experiments conducted by some druggists have shown that men's toilet goods can be sold in increasing amounts when displayed in the cigar department. This is not always the case, however, and illustrates the importance mentioned earlier, of testing and measuring the effectiveness of displays shown of all merchandise.

FINDING BUSINESS DOWN THE STREET.

BY FRANK B. KIRBY, PHAR.D., M.D.*

There are two ways to have fish for dinner. Either you wait for the fish man to call, or you go a-fishing. There are those who say that the cure of to-day's conditions is entirely in the hands of the clerks and salesmen of the country. In other words, production is at par and selling lags. Are you sales-minded? If not, sell out and change your job. If so, there are only two ways to make good. Sales are like fish for dinner—you either wait for them to come to you or you go out after them. There is no other way.

Now advertising does not go out after sales. Advertising is one of several invitations by which sales come to you. So advertising is not the answer.

Suppose we assume that leaders and service, one cent sales and personality, good will, advertising and the square deal have brought to your store every last prospect in sight and still "we need the business." It remains that your problem is exactly that of our large mail order houses. For years they have been mailing ten million catalogs twice yearly, not car loads but train loads and they find that such promotion is still only an invitation by which to have purchasers come to them by mail. Their solution of the problem is just what we are suggesting

* Sales Manager, Abbott Laboratories.

to you—in fact, insisting upon—as the only remaining untried or little-tried way to have fish for dinner.

These mail order houses have found that a successful money-making method of years is not sufficient for to-day's conditions, so in effect they are now going out after new customers in their branches widely scattered throughout the country. We are not suggesting the two store independent but that personal going out after business that creates the sale on the spot for later delivery.

First the plan adds nothing to your weekly pay roll. It simply uses at capacity those quiet hours of the day between the rush periods. Your clerk hire per hour is as much when your clerks are busy as when there is little to do. The thought is a careful selection of your best (or only) clerk with a real sales sense on a business building basis both for himself and you. In other words, you offer him an unusual opportunity for self-development, in the working of a survey of the territory you propose to cover. The very fact that you send your clerk five, ten or twenty blocks (or miles) to personally solicit his business raises the prospect's dignity and builds good will.

Let's get serious. How many bids are there for the business of those prospects of yours who by all rights should belong to you; neighbors of yours reading ads of stores miles away having radio and mail solicitations that offer for sale (and sell) merchandise you stock and without any remote chance that they can get that personal service element that you are organized to give them.

This is a one man job, not different men different days. Either you or your clerk—and once determined who is to develop this work, then make your calls systematic. Call when you are expected as often as necessary to render service.

The survey's the thing. Now, no kidding. This is serious business, so treat it seriously. It means a substantial, growing, permanent business or the sheriff. Chart your whole program on paper. Spot your store in the center of your operating area and indicate all streets or roads in your trading area, one mile, two miles or ten. What business do you want? Get this: You may have and can get any business you want, in any size area you studiously cultivate.

We mentioned that you need no extra clerk hire for this. Also, we remark you need little if any inventory increase. Are you interested? Would you like the good will and patronage of the chiropodists in this increased area? Then spot every one on your chart. Who sells to them and what do they buy? On another sheet list their names, addresses and office hours. The same with your osteopaths or veterinarians, or both, just as you wish. Unless some house is already well caring for your dentists, include them. Add other classes of trade, professional and laity, and work them.

How many beauty parlors within a radius of six blocks or five miles of your store as a center? What do they use that you sell? Who supplies them? What do they know about *Ung. Aq. Rosæ?* Land twenty of them on a five-pound order each and repeats and you have something. You should secure, hold and develop 70 per cent of your prospects. The same with your barbers. Why should they buy witch-hazel and other strictly drug store products five, ten or a hundred miles away when you can give same day delivery, the same price and on a community builder basis of home trade? The fact is your barber does your work for cash and then buys his supplies miles away—goods that you sell for a living.

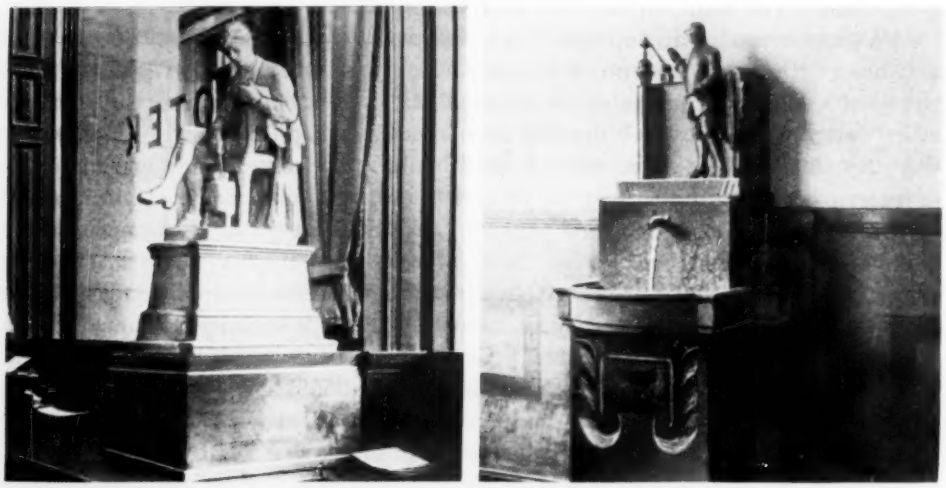
Make another survey of your new territory following a survey of your stock. You are not keeping a drug museum. You bought for resale at a profit. Then sell and sell seriously. List your antiseptics, germicides and larvicides. In another column list the classes of trade using such goods, as homes, orphanages, railroads, florists, dairies, stock yards, janitors and so on. Then spot their exact location on your chart with a different key sign or number for each different trade.

Is it anæsthetics? List them and the corresponding sales opportunity such as doctors, dentists, veterinarians, hospitals, first-aid rooms and clinics. Get the acquaintance—then the friendship of your prospects, as the first move to their good will and patronage. Find out what legitimate drug store products each of them uses; then sell those goods. And if you want fish for dinner, develop your surveys and while holding what business comes to you, increase it by going out after the business down the street.

A prescription drug store on the third floor of an office building with no window display and no transients experimented as follows: Wanting some "business down the street" they made a survey in an area of only four blocks and found forty-eight hotels, tea rooms, restaurants, cafes and clubs each with one or more chefs subject to burns during the peak load. A series of four postal cards was prepared and sent at weekly intervals, each promoting a council-passed burn remedy.

Here we have an extreme case of a test with no good will in a store for which there was no evidence of existence and in a location not even visible to transients and yet these four mailings at 48 cents each landed fourteen new customers—not just sales but new customers. Fourteen new customers at 14 cents each.

The question is how many more of those 48 prospects would have been landed on the personal call method as above? There is no question that a salesman drug clerk calling on them would have easily landed thirty new customers.



Courtesy of William Mair and Journal and Pharmacist.

Statuettes in the Scheele Pharmacy at Stockholm.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

PREREQUISITES TO PHARMACEUTICAL CHEMISTRY.

BY TOWNES R. LEIGH.*

At the last meeting of the American Association of Colleges of Pharmacy, the Conference of Teachers of Chemistry devoted their attention to the subject of Pharmaceutical Chemistry and a series of papers was presented on this important subject. These papers will be printed in this Section consecutively, and the teachers of chemistry in member-colleges are requested to give them their careful attention. Discussion and comment are invited.—C. B. JORDAN, *Editor.*

Few subjects are discussed more frequently by educational bodies than what should be the prerequisites for the various courses of study in the curriculum. Such a theme is popular because it affords ample opportunity for an individual to express not only his views and opinions but to present what he considers the proof that he is right. For example, excellent and persuasive papers have been prepared to show that physics should be a prerequisite to chemistry; while equally as forceful and convincing discourses have been delivered in the support of chemistry as a prerequisite to physics. It is indeed interesting to hear the proponents of each side give many practical cases as proof of the correctness of their respective and opposing assertions.

It is not surprising, therefore, that educators have not yet agreed what phase of chemistry should precede another. One prominent American chemist insists on his students studying quantitative analysis before qualitative, his main argument being that simpler chemistry and less discrimination are required for quantitative analysis than qualitative. Another chemist has for several years introduced his students to organic chemistry before inorganic and declares that the results are highly gratifying. Some colleges require physical chemistry before qualitative analysis, quantitative and organic; while others require the last three as prerequisites to physical chemistry, and some do not require physical chemistry at all for students majoring in chemistry. Finally there are educators who argue that the division in which scholastics have divided chemistry is purely arbitrary and has no basis in nature and results in the narrowing rather than in the broadening of the student's knowledge of the science of chemistry.

A cloudy day in chemistry is our first thought; but not so, for behind the clouds is the sun still shining, so let us "turn the clouds wrong side out just to show the silver lining," which is equally as bright and attractive as that presented by other subjects. For example, some study Shakespeare in high school; others register for the same plays as seniors in college; still others pursue them as a graduate course; while another person uses them as the basis for his dissertation for the doctorate. What then shall be the prerequisite for the study of Shakespeare? It all depends upon the wherefore and therefore of the instruction. The teacher in the high school has a motive different from that of the college professor.

* Dean, College of Pharmacy, University of Florida.

Both lead their flocks into the same green pastures and beside the same still waters; but the visions are different.

The various branches of chemistry afford an analogy. The simple principles of chemistry as taught in the secondary schools are usually presented in general chemistry in order to afford the beginner an elementary survey of the field of chemistry and not because the fundamentals of general chemistry are simpler than the elements of any other particular branch of chemistry. When inorganic chemistry is the first course pursued by a student it differs greatly from a graduate course in inorganic chemistry. I suppose any branch of chemistry might be profitably taught first, if the professor adapted his method of instruction to the drawing out properly of the mind of the student. However, when the professor has once decided on what his first course shall present, his second course should be arranged to follow with the understanding that the student has fairly well mastered the first course. Thus a professor begins to establish a prerequisite. His prerequisites, therefore, though they differ from those of others, may be just as sound educationally and of the same practical success.

The idea of prerequisites in chemistry is largely due to the order in which we ourselves studied the different branches of the subject—a kind of educational inheritance which we have converted into an environment and zealously guard. I have in mind a professor of chemistry, now growing old in experience and reputation, who first studied physical chemistry as a graduate subject and to this day he believes it belongs in the graduate school. Also, I am not unacquainted with other chemists who studied physical chemistry early in their college course and who now insist that the subject be presented in the sophomore year. Though we may not all be able to agree as to prerequisites, there has come about through years of practice a kind of resultant of all of our various opinions. This resultant actually exists and it will be used as our line of thought. A study of a large number of catalogs of the member-colleges will show this resultant either boldly outlined or shadowy.

Therefore, our specific subject for to-day, "Prerequisites to Pharmaceutical Chemistry," is justifiable and a discussion should prove profitable to us, even though we reach a compromise instead of an agreement. The formulation of an order of sequence based upon the common practice which has proved successful will also be beneficial to students who transfer from one college to another. For instance, should one of our member-colleges designate two years of chemistry as a prerequisite to its first course in pharmaceutical chemistry and should another one require no chemistry, it is evident that the content of the two courses is different and cannot be accepted as the same.

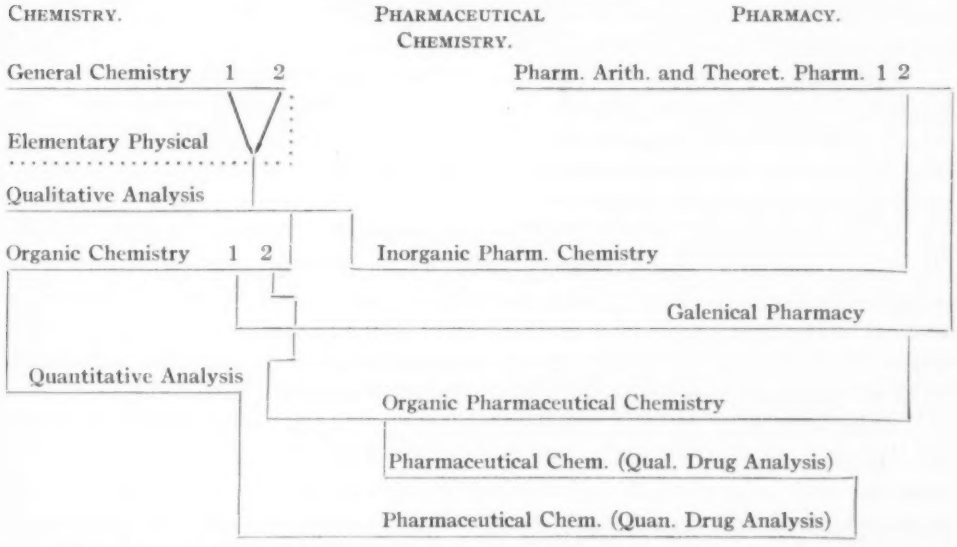
Before proceeding further it will be advantageous to define the term, pharmaceutical chemistry, as it will be used in this presentation. By pharmaceutical chemistry we do not mean to include every branch of chemistry taught to pharmacy students. The course takes its name from its content and not from the class that studies it. While in inorganic and organic chemistry some of the pharmaceutical uses of many compounds may be given, we do not consider these subjects as pharmaceutical chemistry any more than we would call general chemistry physical chemistry because we, necessarily, present some of the physical laws of matter and physical characteristics of the elements and compounds studied in

that course. By pharmaceutical chemistry, then, we mean that branch of chemistry which treats more specifically of natural and synthetic organic and inorganic substances employed in the science and art of pharmacy.

In this discussion we shall consider only those courses in chemistry and pharmacy which should be prerequisites to the different divisions of pharmaceutical chemistry, such as inorganic pharmaceutical chemistry (sometimes cataloged as inorganic pharmacy), organic pharmaceutical chemistry, qualitative drug analysis and quantitative drug analysis. Since pharmaceutical chemistry itself presents so many different phases of chemistry and pharmacy and since the effective teaching of the different phases depends upon the student's previous training, it is evident that the prerequisites will increase in number as he progresses in the study of pharmaceutical chemistry.

Before deciding upon the sequence of the courses and their respective prerequisites the instructors of chemistry and pharmacy of the particular college should have a thorough understanding of the contents of the various courses to be offered. For example, if a special course in elementary physical chemistry is required in the sophomore year before qualitative analysis, the instructor of the latter subject should arrange a course different from a course in qualitative analysis for the student who has had no physical chemistry. If no organized course in physical chemistry occurs in the curriculum, this subject must be presented along with general, qualitative analysis, quantitative analysis, and organic chemistry and every professor concerned must be aware of what is expected of him so that on the completion of all the courses the student has not missed the fundamental principles of physical chemistry. For the purpose of illustration, the disposition of physical chemistry in the scheme of prerequisites for pharmaceutical chemistry is shown by placing it on a dotted line in the diagram which follows:

DIAGRAM OF THE PREREQUISITES TO PHARMACEUTICAL CHEMISTRY.



We first require a course in general chemistry in which the fundamental principles are studied, the subject being taught by lectures, illustrated with ex-

periments, recitations, reading assignments, individual laboratory work, quizzes, motion pictures, lantern slides, charts, etc. Among the topics presented are those in general as outlined by Dr. E. V. Lynn in the "Tentative Pharmaceutical Syllabus, Fourth Edition," who admirably sets forth the aim of such a course. This course requires about three lectures or recitations per week and six hours of laboratory work including quizzes per week throughout the year. In some colleges it may be found advantageous to devote the laboratory work of the second semester to qualitative analysis, supported, of course, by lectures and recitations in that subject. This option is illustrated in the diagram by the suspension of qualitative analysis upon a Y, one limb of which is attached to the first semester, the other to the second semester of general chemistry signifying a choice of prerequisites. The choice, of course, largely determines the method of presentation. However, it is generally best to follow a year of general chemistry by a course in qualitative analysis such as outlined by Dean C. B. Jordan (*Ibid.*), concerning which he says,

> "It is assumed that the student has completed a study of the metals and non-metals. A study of the metals may accompany qualitative analysis, if it has not preceded it. At any rate a review of all of the reactions of metals and non-metals that form a basis for the separation and identification of them should be given."

While the student is pursuing general chemistry and qualitative analysis he is also studying pharmaceutical arithmetic and theoretical pharmacy, a semester each. The pharmaceutical arithmetic includes the application of mathematics to pharmacy, a thorough study of the system of weights and measurements and their relation to each other, and laboratory work which acquaints the student with the weights and measures studied, and experiments are carried out on specific gravity, percentage solutions, thermometry, etc. Theoretical pharmacy includes the history and nomenclature of the U. S. P., the N. F. and a study of the apparatus and practice of the processes of operative pharmacy. The student conducts in the laboratory operations illustrating the principles considered in the lecture and performs the simpler pharmaceutical operations.

The course of qualitative analysis is followed by organic chemistry, and this, in turn, by quantitative analysis, if they are not taken simultaneously. The scope of the course in quantitative analysis as outlined by Dean Jordan (*Ibid.*) is, in our opinion, highly satisfactory; as is likewise the course in organic chemistry as outlined by Dr. Lynn (*Ibid.*).

While the student is pursuing the first semester of organic chemistry he is also taking inorganic pharmaceutical chemistry (sometimes cataloged as inorganic pharmacy), having as prerequisites qualitative analysis and theoretical pharmacy and involving a consideration of inorganic compounds used in medicine, their origin; their physical, chemical and physiological properties; and the preparation of those inorganic substances and their use in compounding remedies.

After a student has had the first semester of organic chemistry he is ready for galenical pharmacy, which has theoretical pharmacy as an additional prerequisite and involves such preparations as syrups, spirits, tinctures, extracts, emulsions, etc., and their manufacture in larger amounts by the use of pharmaceutical machinery. Next comes organic pharmaceutical chemistry, which includes the preparation, properties and uses of natural and synthetic organic drugs, having two semesters of organic chemistry and galenical pharmacy as prerequisites.

The outline as given by Dr. Glenn L. Jenkins (*Ibid.*) is worthy of close study and application in general.

Then follows qualitative drug analysis for a semester, this course being the detection of the common synthetics, glucosides and alkaloids in pharmaceutical preparations. The tests used are those commonly accepted as evidence in medico-legal cases. The laboratory work is on powders, solutions, emulsions, etc. After organic chemistry, quantitative chemical analysis and qualitative drug analysis, as illustrated in the diagram, comes quantitative drug analysis which may be briefly defined as the quantitative analysis of pharmaceutical materials by physical means, or by chemical methods, gravimetrically or volumetrically. After reaching this point, a further discussion of the subject would doubtless be so theoretical that it would be of no practical value.

A HOSPITAL DISPENSARY.

"Great changes have occurred in the quantity and character of the drugs used during the last 130 years. It is worth while looking at two or three of the chief items used in the hospital dispensary 100 years ago. Sulphate of magnesia came into common use about the beginning of the nineteenth century, and replaced the purgative waters of the neighborhood of London, notably Streatham and Islington, which were so freely used in the previous century. In 1836 the consumption of magnesium sulphate at St. Bartholomew's Hospital was 26 cwt. a year, and in 1876 it had risen to 43 cwt. The consumption of linseed meal for poultices, the use of which began some 150 years ago, was over eight tons in 1836, and by 1885 had reached the enormous amount of 15¾ tons. The use of linseed meal slowly declined after the introduction of antiseptics by Lister, and has now almost completely disappeared. From reading contemporary novels we are familiar with the fact that blood-letting was prevalent and fashionable in the early part of last century, but it is almost impossible to believe that in the year 1837, the year Queen Victoria began to reign, we used in the hospital 96,300 leeches. When we consider that leeches were but one way of letting blood, and that we had consulting cuppers and assistant cuppers, we may well believe that our grandfathers were a full-blooded race.

"Apothecaries remained on the staff of St. Bartholomew's Hospital from 1567 to 1867—that is, for 300 years. It is quite clear that at some period of the time they were responsible not only for the drugs but also for the treatment of patients. Thus, in 1757, it was noted that the apothecary was seeing about 250 out-patients a day, while the physicians and surgeons were attending to the in-patients; and also in 1840 there was an assistant apothecary, part of whose duty was to cup in-patients. The office of apothecary to the hospital was finally abolished in 1867, when in his place four house physicians were appointed. Up to that time, Mr. Wood, who was the last apothecary, performed the duties in the out-patient department which are now performed by some twenty-five resident officers. It is handed down by tradition that Mr. Wood was exceedingly clever in rapid and facial diagnosis, and that he never overlooked a serious case which required urgent operation. It has been told me by some who knew him that the method of work was as follows. He stood on a chair in the casualty department with a number of tickets for medicine in his hand, and he called in a loud voice—'All those who have a cough, stand up,' and these received tickets for cough medicine. He would then call—'All those who have stomach-ache, stand up,' and they would receive likewise a ticket for the appropriate medicine, and so on until he had emptied the surgery."—Prof. G. E. Gask in *Pharmaceutical Journal and Pharmacist.*

Merry Christmas and a Happy and Prosperous New Year!

CONFERENCE OF PHARMACEUTICAL LAW ENFORCEMENT OFFICIALS.

ABSTRACT OF THE MINUTES OF THE MEETING HELD IN MIAMI, THURSDAY, JULY 30TH AND FRIDAY, JULY 31ST.

The First Session of the third annual meeting of the Conference of Pharmaceutical Law Enforcement Officials was convened by Chairman R. L. Swain, at 9:30 A.M., July 30th, in Remington Hall. Those present were: W. E. Bingham, Alabama; E. D. Oslin, Arkansas; Arthur D. Baker, Colorado; C. T. Gilbert, Louis Montanaro, Connecticut; W. M. Hankins, H. R. Monroe, Norman C. Edmondson, Wm. E. Fossett, M. H. Doss, Florida; John A. J. Funk, Russell Rothrock, F. V. McCullough, Indiana; George Wilhelmi, Kentucky; R. L. Swain, Maryland; J. W. Dargavel, Minnesota; George W. Mather, Hugo H. Schaefer, Jacob Diner, F. C. A. Schaefer, New York; E. V. Zoeller, North Carolina; P. H. Costello, North Dakota; F. H. King, M. N. Ford, Ohio; D. F. M. Lemore, Oklahoma; L. L. Walton, Pennsylvania; Rowland Jones, South Dakota; Lester Hayman, West Virginia.

Chairman Swain delivered his address and upon motion of Mr. Oslin, seconded by Mr. Walton, same was accepted and received for publication. It follows:

ADDRESS OF THE CHAIRMAN.

THE NEED FOR A SOUND LEGAL AND PROFESSIONAL POLICY.

BY ROBERT L. SWAIN.

Many important developments of the past year have greatly enhanced the value and appreciation of law enforcement. It is recognized, perhaps as never before, that the security of society finds its chief assurance in the law, and the integrity of the law depends upon the reaction of the public mind. The relationship existing between law and society has been accepted as a basic factor in both legal and social policy. It is from this point of view that the past year was a notable one. During this period many important experiments and studies were carried out to measure and determine the significance of the relationship between society and the laws which society recognizes. There have been serious efforts made to note the public reaction to law, and to measure and evaluate the social effect of specific legislation. The Wickersham Committee has carried on an important study to determine the significance of national prohibition and to discern, if this be possible, the legal and social consequences of this new national policy. The Institute of Law at the Johns Hopkins University has been engaged in subjecting the law to the critical, analytical gaze of the scientist and research worker. The Institute of Public Affairs of the University of Virginia brought together an impressive array of social and legal scholars who gave much time and attention to problems of profound legal and social importance. The decisions of the Supreme Court have been considered of more than usual significance. Close students have discerned a distinctly liberal tendency in the opinions of the Court. This tendency or viewpoint may be strongly prophetic of a more liberal attitude in the development of the law as a whole. While it may be too optimistic to state that we are witnessing the development of a new national philosophy in meeting social needs, it is true that these needs have been given very earnest study and consideration. In my own State of Maryland, there has been brought about a state-wide organization of the states' attorneys for the purpose of making the law effective and for pointing out the legal defects of the present system, the thought being to evolve a legal system conforming to and expressive of the accepted social standard. These various movements are of much more than casual significance. They indicate an earnest effort on the part of earnest men to meet seriously the many legal, social and economic problems, which now challenge the integrity of our national institutions.

It would thus seem that the establishment of this Conference of Pharmaceutical Law Enforcement Officials is in line with the accepted thought of the day. If the broad study of legal problems is to be effective, it must be supported and paralleled by detailed studies of the many endeavors in which society is concerned. The more that is learned of the social value of a calling, the more intently we delve into the public significance of an undertaking, the more competent we

are to direct and develop it in the public interest. Then again, each undertaking presents a specialized phase that can be dealt with effectively only by those whose experience and training have made them competent for the task.

In approaching our problems and in seeking to meet them in the best possible manner, I think we should bear in mind always the public aspects of pharmacy. It is my firm belief that we are fast approaching a more intelligent public interest in the public value of pharmaceutical practice. I believe the public is beginning to more fully appreciate the real significance of the service which pharmacy renders. The public will become much more exacting and discriminating as its knowledge of drugs and medicines increases. The law will become the medium through which this discrimination will be made effective. It seems to me that this knowledge of public value and public interest should be kept in mind as a basic factor in the work of this Conference.

This Conference was designed to serve an essential purpose in the field of pharmacy. It was meant to be a force of coöperation and coördination. It was intended to serve as a clearing house for the many problems of fact and law which are encountered in the enforcement of pharmacy laws, and to become the source and inspiration of new pharmaceutical legislation. It should be remembered that this body represents public authority, and is composed of men engaged daily in applying definite legislative enactments in the name of the state. It follows obviously that the members of this Conference are familiar, in detail, with conditions in their own states, and conversant, in a general way, with conditions throughout the country. Our work should place us in a position of leadership so far as this specific field is concerned. All of us come into practical contact with practical conditions. We know the conditions which the law is designed to remedy, and we know the defects which inhere in the laws themselves. A vast experience, speaking collectively, is ours, and we should rely upon it and draw upon it as liberally as the necessities of the present demand in attempting to meet the problems which confront pharmacy to-day.

One of the difficulties in the way of effective enforcement arises from the fact that the laws themselves have not been carefully thought out, and thus have not been designed to meet a real public need. Too frequently, the real and only purpose of the law has been to develop trade advantages. The result is that pharmacy laws present many diverse phases. Uniformity in principle has not been achieved, and this arises from the absence of any deep rooted policy. That the result has not been altogether satisfactory, either from the public or the professional point of view, is easily read in the conditions with which we have to deal. My own view is that most of the problems which so deeply concern pharmacy are due to the failure of pharmacy to properly place its relationship to the public, and then to formulate its legal and professional policy upon those principles which contribute most to the public interest.

It is in this phase of the matter that I think this Conference finds its greatest inspiration and responsibility. As we as individuals come close to the source of the law, both from the legislative and administrative points of view, it is our responsibility to formulate a legal policy which will afford the maximum of protection to the public, and which at the same time will afford the widest limitations for the development of pharmacy as a dominant force in public health. It should be our duty to grasp the public appreciation of pharmacy and to crystallize it into certain legal principles, and to weave it into the very fabric of our professional obligations. It should be our duty to develop a pharmaceutical policy which will vitally touch the public.

Such a policy should be made the basis of our legal development and professional practice. Our pharmacy laws should be made expressive of the public health service which pharmacy renders. They should be based on a recognition of a public service, and should be so formulated as to serve the widest public need. The full responsibility of making drugs and medicines available to the public should be vested in the pharmaceutical profession, and the profession should be held to a strict accountability. Pharmacy should take in every form of manufacture, production and distribution. The whole drug field should be carefully surveyed, and every portion of it made safe in the public interest.

The logic of such a policy is compelling, once the significance of drugs and medicines is understood. The ultimate purpose of drugs and medicines is for the treatment and prevention of disease. And this is as true of the so-called simple remedies as it is of the more complex chemical compounds. Each and every one is designed to meet a serious need. It may well be that the designation "simple remedies" is most misleading when viewed in the light of the use to be made of them. My whole contention is that we have not sensed, in the fullest, the significance of

pharmacy. Even our view has been too casual, too much a matter of fact. In taking things for granted, we have largely missed the mark. There is no portion of the field of drugs and medicines that can be regarded as of no importance to public health. Pharmacy has a most direct relation to public health. The public health will be more amply protected by giving to the pharmaceutical profession control over this important matter.

Obviously, there are difficulties in the way, but these difficulties, it may be discerned, do not arise from any defect in the policy which I suggest. The difficulties are purely economic, and, being so, will yield to the pressure of public opinion once the public becomes aroused to the real importance of pharmaceutical practice.

In formulating the necessary policy, I should say we should give concern to the following points: A thorough survey should be made in each of the states for the purpose of ascertaining authoritatively the nature, scope, extent and value of pharmaceutical practice. Pharmacy should be given the responsibility of manufacturing, producing and distributing drugs and medicines, including all pharmaceutical preparations and proprietary medicines. In those cases where public convenience would require exceptions to the general rule, the nature and extent of the exceptions should be in the hands of the profession. An unceasing effort should be made to restrict the ownership of pharmacies to registered pharmacists. The practice of pharmacy should be regarded as an individual and personal practice. It should be regarded as imposing personal responsibility, the assumption of which by corporate or other business interests should be construed as inimical to the public good.

Such a policy would insure the maximum of protection to the public. It would also afford the widest opportunity for the development of pharmaceutical practice. It would be peculiarly consistent with the demands of public health by excluding the ignorant and untrained from producing and distributing drugs and medicines. Certainly a due regard for the public interest demands that every phase and aspect of the remedies used in the treatment and eradication of disease shall be rigidly controlled. Entrusting any portion to the untrained is simply to expose society to unwarranted danger. I frankly feel that much of our present-day difficulties has come from failure to delve deep enough into this subject. There should be a coördination of all pharmaceutical activities, and these should be directed and developed in the public interest. Our policy should be so elastic as to include all phases of pharmacy, and so rigid as to regard the public interest as its chief concern.

Of course, it can be said that this policy is too ideal to be practical. On the other hand, I prefer to view it as so practical as to be ideal. Certainly no one can contend against placing the responsibility for the medical phases of public health with the medical profession. The sanitary engineer is obviously best fitted to deal with matters of sanitation and hygiene. In other words, the public health is best served by placing responsibility with those fitted by training and experience for the task. The view with regard to drugs and medicines has been largely the opposite. The thought seems to have been that safety and due regard for the public interest is consistent with certain conditions more or less general in the production and distribution of drugs and medicines. The trouble is that the public interest is not, and has not been the controlling consideration even in the pharmaceutical point of view. The problem is largely an educational one. The public interest is present, and needs to be recognized in clearest perspective.

Another phase of the subject is to be found in the fact that law enforcement is an equalizing and stabilizing influence. By requiring all concerned in the production and distribution of drugs and medicines to conform to the same legal requirements would do much to eradicate many abuses which are, in reality, unfair business practices. Competition is most serious when it arises between groups meeting different standards but operating in the same field. This has been amply illustrated in the field of retail distribution. Many troublesome conditions have arisen simply because some groups have been able to profit through discrimination and unfair business methods. While, in theory, the protection of the law has been available to all, in practice, the law has been most effective in making this protection unavailable. Thus, it would seem that a sane and intelligent enforcement of laws, arising from a sound and deep rooted policy, would not only advance pharmacy in the field of public health, but it would be equally effective in bringing about a more wholesome reaction to questions of great commercial and economic importance.

In conclusion, I strongly recommend that this conference retain the closest affiliation with the AMERICAN PHARMACEUTICAL ASSOCIATION. All that the Conference stands for has been

recognized and sponsored by the AMERICAN PHARMACEUTICAL ASSOCIATION for many years. In the ASSOCIATION, the need for adequate pharmacy laws was first recognized. The ASSOCIATION has long been the foremost champion of sound educational development. It has taken a distinguished part in the establishment and maintenance of high standards for medicinal preparations. It has been always devoted to the development of pharmacy as a potent force in public health. The ideals of this Conference can be no less than the ideals of the AMERICAN PHARMACEUTICAL ASSOCIATION. The ASSOCIATION'S environment is peculiarly appropriate to the growth of the ideas which this Conference must nurture and develop.

Secretary Ford submitted his report which also included recent pharmaceutical legislation. Upon motion of Mr. Lemore, seconded by Mr. Funk, the report was accepted with the thanks of the Conference for the work involved.

REPORT OF THE SECRETARY.

BY M. N. FORD.

Since our last meeting, your Chairman has been quite busy directing the Secretary what to do for the good of the Conference.

The October 1930 issue of the JOURNAL, published an abstract of the minutes of our Baltimore meeting and by direction of Chairman Swain, we mailed on December 11, 1930, 282 reprints of the minutes of the Conference to all state board members and others interested in pharmaceutical law enforcement.

On March 6, 1931, the following letter and questionnaire were sent to all the state boards of pharmacy:

Columbus, Ohio, March 6, 1931.

DEAR MR. SECRETARY:

Chairman Swain of the Conference of Pharmaceutical Law Enforcement Officials, has requested me to collect information from all states as to what drugs and preparations may be sold by persons other than registered pharmacists.

In order to compile this important information for the Conference, I would kindly ask you to fill in the enclosed sheets the best you can, with any other information on the subject you deem necessary and return to me as soon as possible.

This being general legislative year, I would like for you to assume the responsibility of forwarding to me, copies of all bills introduced into your legislature having any reference to pharmacy, medicine or public health.

In behalf of the Conference, we shall appreciate your coöperation.

(Signed) M. N. FORD, *Secretary.*

STATE OF.....

1. What Department of State enforces the following laws:

a. Pharmacy.....
b. Poison.....
c. Narcotic.....
d. Pure Drug.....

e. How many Inspectors employed for the above..... (*a*)..... (*b*)..... (*c*)..... (*d*).....

f. How many inspections were made during the year 1930 for the above..... (*a*)..... (*b*)..... (*c*)..... (*d*).....

g. How many prosecutions during the year 1930 for the above (*a*)..... (*b*)..... (*c*)..... (*d*).....

h. How many drug stores in the State.....

2. Do places other than Pharmacies sell Patent and Proprietary Medicines.....
3. Do places other than Pharmacies sell Drugs.....
4. Are such places required to have an annual permit or license.....
5. Make an X in front of the following that are not permitted to be sold except in a pharmacy under the supervision of a legally registered pharmacist. (Here followed a list of 200 drugs and medicinal preparations, similar to that in these Minutes of the survey by Dr. Robert P. Fischelis.)

We had a ready response to our request from most of the states and while some of the questionnaires were very incomplete, it gives us an idea as to the extent of pharmaceutical law enforcement in the different states.

Compilation of the result of the questionnaire has been undertaken and the results will show the seeming inactivity of some states in pharmaceutical law enforcement.

The first four questions of the questionnaire were answered as follows:

No. 1 A—	No. States.
Board of Pharmacy	33
Board of Health	2
Department of Agriculture	1
Department of Law Enforcement	3
Department of Registration	1
Department of Licensing	1
No report from	11

No. 1 B—	No. States.
Board of Pharmacy	30
Board of Health	2
Department of Agriculture	2
Department of Law Enforcement	3
Department of Registration	1
Department of Licensing	1
No report from	13

No. 1 C—	No. States.
Board of Pharmacy	15
Board of Health	5
Department of Agriculture	2
Department of Law Enforcement	3
Department of Licensing	1
State Narcotic Division	1
State and Federal Authorities	11
Prohibition Commissioner	1
County Attorney	1
No report from	12

No. 1 D—	No. States.
Board of Pharmacy	11
Board of Health	12
Department of Agriculture	11
Department of Law Enforcement	3
Department of Registration	1
State Authorities	2
No report from	12

	States.		No. Inspectors.
No. 1 E-*a*	34	have	61
b	34	have	55
c	34	have	44
d	34	have	51
	10	have no Inspectors	
	8	made no report	

	States.		No. Inspections.
No. 1 F-*a*	37	made	47,392
b	37	made	45,248
c	37	made	28,534
d	37	made	43,611

No report from 15 states.

	States.		No. Prosecutions.
No. 1 G-*a*	34	made	749
b	34	made	418
c	34	made	1351
d	34	made	349

No report from 18 states.

	States.	
No. 1 H—	35	reported 42732 Drug Stores
	17	made no report
No. 2	40	answered Yes
	12	made no report
No. 3	30	answered Yes
	10	answered No
	12	made no report
No. 4	13	answered Yes
	25	answered No
	14	made no report

COMMENTS.

A total of forty questionnaires were returned and some of them were very incomplete, therefore, the result from the questionnaire is not what we expected it to be.

The States of Arkansas, Maine, Montana, District of Columbia and Alaska, did not return the questionnaire, but submitted letters of explanation in detail.

The States of Mississippi, Nevada, Rhode Island, Tennessee, Texas, Philippine Islands and Porto Rico, made no reply to our first and final requests.

We would call your attention to the answers given No. 1-*a*-*b*-*c* and *d*. The Pharmacy, Poison and Pure Drug laws are enforced in forty states by six different enforcement agencies, while the Narcotic Law is enforced by nine different departments. It is not difficult to determine from the questionnaire, what department has met with the greatest success during the past year in enforcement work. This is judged from the way the questionnaires were returned and answered.

We note 34 states have 61 inspectors for enforcing the pharmacy laws and 47,392 inspections were made in 37 states. This would indicate 3 states had some inspections without employing an inspector. With 61 inspectors and 47,392 inspections, there are only 749 prosecutions reported for violation of the pharmacy laws. This small number of prosecutions would seem to indicate the law is being quite generally complied with, or the inspectors are not doing their duty.

In comparing the number of inspections with the number of inspectors employed, we believe the number of inspections made should reach at least 125,000 instead of 47,392 as reported. To obtain this result however, would mean that the work would be done without political interference and with a desire of the inspectors to do their work.

In the Narcotic enforcement for nine different agencies, there are 44 inspectors employed and they have reported a total of 28,534 investigations with 1351 prosecutions. The Narcotic Law was violated almost twice as often as the combined laws of Pharmacy, Poison and Pure Drug, as reported in the 34 states.

We do not have the data as to who the Narcotic violators are, but comparing reports with that of the Pharmacy and Poison law violations, it would seem violators of the Narcotic Law are not within the drug stores.

Thirty-five states have reported 42,732 drug stores. This number is in proportion to the total number of stores reported in the United States.

The list of drugs and preparations named in question No. 5 total 200 and were selected for the purpose of showing how different the legal requirements are in the several states for the distribution of drugs, medicines and poisons.

You will note that one state has reported Patent and Proprietary Medicines must be confined to the drug store in that state, however, in question No. 2, the same state has indicated that Patent and Proprietary Medicines may be sold by places other than drug stores.

We note also that four states have indicated any U. S. P. drug or preparation must be confined to a drug store. In checking over that list, it will be noted that the same four states have marked U. S. P. drugs that may be sold in places other than pharmacies.

In question No. 3, we have 10 states reporting that no places other than pharmacies, may sell drugs, while the same 10 states have listed under question No. 5, a number of drugs that may be sold by any dealer.

For the above reasons the questionnaire has not furnished us with as complete information as was desired. In our letter to the Boards of Pharmacy, we requested copies of all bills introduced into the legislature, having any reference to Pharmacy, Medicine or Public Health. Complying with this request, we have received information from fifteen states, as follows:

Connecticut.—Two bills reported introduced, no copies furnished or titles mentioned.

Iowa.—One bill reported introduced and enacted into law. A bill relating to the practice of pharmacy and providing a penalty for violation thereof. The bill more clearly defines a pharmacy and makes both the proprietor of store and owner of a certificate, responsible for the proper display of same. It very boldly provides that all drugs and medicines sold, exposed or offered for sale shall be under the immediate personal supervision of a registered pharmacist at all times.—*Except for Temporary Absence Which Shall Mean Necessary Absence for Meals and Business or Other Necessary Cases While the Pharmacy Is Open for Business.* We believe a discussion on the question of exemptions would be of great interest to the Conference.

Maryland.—Your Chairman reports two bills introduced and passed. One to more clearly define a pharmacy and the other to provide for stricter requirements to the examinations and

eliminating the assistant pharmacist examinations. We think the state of Maryland has a wonderful definition for a Pharmacy and we want to quote that section of their law which is as follows:

> "Every store or shop or other place where drugs, medicines or medicinal chemicals are dispensed or sold at retail, or displayed for sale at retail, or where physicians' prescriptions are compounded, or which has upon it or displayed within it or offixed to or used in connection with it, a sign bearing the word or words, "Pharmacist," "Pharmacy," "Apothecary," "Drug Store," "Druggist," "Drugs," "Medicines," "Medicine Store," "Drug Sundries," "Remedies" or any word or words of similar or like import, or where the characteristic show bottles or globes filled with colored liquids or otherwise colored, are exhibited or any store or shop or other place, with respect to which any of the above words are used in any advertisement, shall be considered a pharmacy within the meaning of this sub-title."

Now that is one fine definition for a pharmacy, but remember, the state of Maryland was very liberal in their exemptions for they provide the section shall not interfere with the sale by general merchants of patent or proprietary medicines and household or domestic remedies.

Maine.—Two bills reported introduced. One is a pre-requisite bill and provides for annual registration of pharmacies and increasing the examination fee. The other bill is to amend the Narcotic Act. No copies of bills received and no report as to disposition.

Montana.—One bill reported introduced. We were not furnished a copy of the bill and have no report as to final disposition. I understand it is sort of a restrictive sales bill.

Missouri.—A prerequisite bill was reported introduced.

New Hampshire.—One bill reported introduced to place the enforcement of the Narcotic Law with the Board of Pharmacy. No copy of bill or report of disposition.

New Jersey.—Two bills were introduced and both failed to pass. One bill proposed to penalize the manufacturer, wholesaler or other dealer in drugs, medicines or poisons who sells such products to general merchants for resale with full knowledge that it is unlawful for the general merchant to sell them under the Pharmacy Act.

The other bill provided for the annual registration of Pharmacies and more clearly defined a Drug Store or Pharmacy. Both bills had the support of the State Association and the Board of Pharmacy.

Ohio.—No legislation was attempted by the profession. One bill was enacted into law providing for proper labeling of caustic acids and alkalies or corrosive substances

A bill was introduced to deny the Ohio State Pharmaceutical Association the privilege of recommending five names each year to the Governor for appointment of one on the Board of Pharmacy. The bill received no consideration except to stay with the committee to which it was referred. The bill is said to have originated from a grocers' association.

Bills were introduced for amendment to the Narcotic Law, the statute controlling radiator alcohol and the prohibition law, all of which were defeated. The only legislation enacted affecting the druggist was a tax on cigarettes.

New York.—Two bills were introduced; one to restrict the sale of Barbituric Acid and the other to restrict to registered pharmacists for resale, all United States Pharmacopoeia or National Formulary Preparations. Copies of bills were furnished, but we have no report as to final disposition.

North Dakota.—A bill to license general dealers to sell drugs when more than five miles from a pharmacy, was passed. The act provides the Board of Pharmacy shall from time to time add to or eliminate from the approved list of simple household remedies that may be sold by general dealers.

Oklahoma.—One bill was introduced and killed in the House of Representatives. It provided for registration of all who had been duly licensed by the governing board of pharmacy of the State of Oklahoma and provided for general reciprocity.

South Dakota.—One bill was passed to provide for annual registration of Drug Stores, at a fee of ten dollars and effective July 1, 1931; it also regulates the ownership of Pharmacies and prescribes penalties for violations.

Another bill provides for graduation from a four-year pharmacy course with one-year drug store experience for admission to State Board examinations.

Washington.—Nineteen bills were introduced having some reference to pharmacy, medicine or public health. Six of these bills were pertaining to pharmacy and the only one passed that did not receive the Governor's veto was a bill relating to registration of pharmacists and assistant pharmacists, by providing for a minimum two-year course from a College of Pharmacy, approved by the Director of Licenses.

The Washington Legislature also passed two Narcotic bills that failed to escape the Governor's veto; the bills provided for the regulation and distribution of narcotic drugs and proposed commitment of drug addicts for treatment and by appropriating $100,000.00 to carry on the rehabilitation work.

The state of Washington was the only state that gave us a complete report by sending copies of bills and reporting final action on same.

West Virginia.—This state reports plenty legislation has been introduced, but happily none has passed. No bills have been furnished and we cannot repo t what the legislation was about, except for one bill to regulate the sale of barbiturates which will probably pass.

Legislation was attempted in 17 other states from which we have had no report.

All correspondence in behalf of the Conference has been properly taken care of during the year and copies filed for future reference.

Respectfully submitted,
M. N. Ford, *Secretary.*

REPORT OF THE TREASURER.

As a result of the good work of your Finance Committee, Messrs. Robert P. Fischelis of New Jersey, C. T. Gilbert of Connecticut, and F. H. King of Ohio, we have received the following contributions of $5.00 each, making a total of $190.00 from the following States: Ohio, Maine, North Carolina, Pennsylvania, West Virginia, Connecticut, New Hampshire, Missouri, New Jersey, Kansas, Indiana, Idaho, Kentucky, Arizona, North Dakota, New York, New Mexico, Maryland, Montana, Oklahoma, Tennessee, Wisconsin, Delaware, Colorado, Iowa, Oregon, Michigan, Vermont, Virginia, Arkansas, Alabama, Florida, Georgia, District of Columbia, South Dakota, South Carolina, Minnesota, Nevada.

Total disbursements $23.62; leaving a cash balance on hand July 30, 1931 of $166.38.

M. N. Ford, *Treasurer.*

C. T. Gilbert, Chairman of the Finance Committee, submitted the report of the Committee. Upon motion of Mr. Funk, seconded by Mr. Jones, the report was accepted and ordered printed. The report follows:

REPORT OF THE FINANCE COMMITTEE.

Your Committee appointed to solicit contributions of $5.00 each from the various Boards of Pharmacy, to provide a fund for carrying on the activities of this organization, begs leave to report as follows:

On June 20, 1930, we sent to every Board member listed in the National Association of Boards of Pharmacy Proceedings a letter calling attention to the work of this Conference. We suggested that each Board make a contribution of $5.00 from its regular funds to sustain the work of the Conference, and if this was not possible under the rules of the Board, we suggested that the individual members each contribute a sufficient sum to bring the contribution of their Board to $5.00.

By October 1930, we had received contributions of $5.00 from twenty-three states.

On November 20, 1930, we sent a follow-up letter to the Secretaries of the twenty-six Boards which had not responded to the first letter. Eight additional contributions of $5.00 were received as a result of this letter.

On May 18, 1931, we sent a third communication to the eighteen Boards that had not yet contributed, and five additional contributions of $5.00 were received as a result of this letter.

This gives a total of thirty-six contributions of $5.00, or $180.00, and leaves thirteen Boards who have ignored our requests for assistance. Of the thirteen, only one Board refused point-blank to make a contribution, and their argument was based on the fact that we have

already too many associations in the field, and that another organization to carry on the work that this body has been doing is unnecessary.

While we regret that we are unable to report one hundred per cent coöperation, we feel that the voluntary contributions amounting to $180.00, and representing almost three-fourths of the Boards of Pharmacy of the United States, are an indication that the work of this Conference has been of value and that its future efforts are looked forward to with interest.

Respectfully submitted,
C. T. GILBERT
F. H. KING
ROBERT P. FISCHELIS.

Upon motion of Mr. Bingham, seconded by Mr. Funk, the Committee on Finance was to be continued.

In the absence of Mr. Winne, his paper on Practical Benefits from Annual Registration was read by Mr. Rowland Jones. The paper was discussed by Messrs. Walton, Hankins, Bingham, Mather, Gilbert, Dargavel and Ford. Upon motion duly seconded, the paper was referred for publication.

PRACTICAL BENEFITS FROM ANNUAL REGISTRATION.

BY A. L. I. WINNE, SECRETARY, VIRGINIA BOARD OF PHAMMACY.

The first thought that occurs with reference to the annual registration of pharmacists and pharmacies by boards of pharmacy is probably that of its revenue-producing angle. That is an important slant to most boards in states in which the annual re-registration is in practice. It is an important feature in my own state of Virginia. There we work under a budgetary system, and the board of pharmacy is allotted a fixed sum upon which to operate, yet we are expected to be approximately self-supporting. Our fees for examinations, reciprocity and annual re-registration constitute the bulk of our income. So, the annual registration is of importance to us from that viewpoint.

There are other considerations, however, to the annual registration of pharmacists, assistants, pharmacies or any other class in a state where registrations may be required. We have found the system valuable in getting at least a check on the men registered in the state, many of whom will have had a change of address during the year. We have a peculiar law in Virginia that requires the applicant for any sort of a license, and pharmacy annual registration is a mere form of licensure, to have paid his poll tax in the state for the year next preceding the last tax year, if it was assessable against him for that year. That brings in revenue to the state, indirectly, of course, and not through the board of pharmacy, but nevertheless into the state's treasury. Not many states have such a provision.

We have in Virginia a system of registering the pharmacies as well as the men who practice in them. This also brings in some revenue, but aside from that is a valuable feature of board administrative work. In order for a pharmacy to secure a permit to operate for the calendar year a permit must be obtained by filing an application in which is set forth under oath the name of the store, its location, its ownership, the name of the registered pharmacist in charge and the names of any other pharmacists or assistants employed in that store. The hours the place is customarily open for business are set forth and the hours the several pharmacists are on duty. There is a variety of circumstances stated, but ordinarily, where two or more pharmacists are employed they will be shown to alternate in the usual manner. In the one-man stores the pharmacist must show that he is on duty such hours as his place of business is open for business. He does not get a permit until he subscribes to this under oath. If he fails to take out a permit he is subject to fine for operating without a permit. We find sometimes that the pharmacist, in order to get a permit, compromises with his conscience and stretches his statements. But it is nevertheless impressive in most instances when a man deliberately fills in a statement and goes before a public notary and states that it is the truth, and further that it may be checked up on him, and that he may be confronted in court with the document that he has subscribed to, he having fixed his own hours of his own free will. It is embarrassing to the pharmacist when this is done, and they have a hard time explaining how they came to "slip a cog."

This system is very valuable to us for another reason. No person, registered or otherwise, may engage in the drug business until they have received a permit. The pharmacist acts on

his own credentials and procures his permit. The non-pharmacist who wants to engage in the drug business must obtain his permit through the registered pharmacist employed in charge of his pharmacy. That means that he must have a registered pharmacist employed, and no bluffing goes about that phase of the matter because an additional affidavit executed by the pharmacist in charge becomes a part of the application. We do not accept the statement of a non-pharmacist that he has such and such a pharmacist employed. We allow that pharmacist, so employed, to make affidavit to the fact that he is employed in that particular pharmacy, and state his hours of employment. In order to secure a permit we require that the pharmacist in charge put in at least half the number of hours the place is open for business. Otherwise he comes within the definition of temporary employment. Chain stores and corporations must procure their permits through the registered pharmacists in charge of each particular store. Two permits are not issued simultaneously to any one pharmacist. If he holds one permit that bars him from obtaining another. He therefore may not be in charge of two pharmacies. Do not confuse our use of the term "in charge of" as here used. We have no reference to the business management of a store. We have reference to the responsible man in charge of that intangible portion of the place of business that brings it within the definition of a pharmacy.

We believe that the annual registration of pharmacists and pharmacies also keeps the men in pharmacy in the state in contact with their board of pharmacy and its work, and that is useful in many ways in promoting harmony and securing a measure of coöperation on the part of those practicing pharmacy in the state.

Through the annual registrations we are able to keep records in the office of the board, that through cross indexing, enables us to compile lists of various sorts, as desired. We can list the names of the registered pharmacists by examinations, those registered by reciprocity, the assistants, or the stores in the state, or those in any particular city. We can take a particular city and list the men in the stores in that city without much trouble. We can list up a county or a section of the state, if that is desired. While these things may not often serve any useful purpose, when they are desired they are available, and such lists can be kept up to a reasonable degree of accuracy at all times.

The annual registrations entail considerable work, and the keeping of the records of men and stores is a never-ending job, but it is a source of a great deal of satisfaction in many instances, aside from the revenue aspect. We believe that it is a material aid in securing a better observance of the pharmacy laws, considered from many angles. We do not know what the feeling is in other states where the annual registration is carried out, but we would not want to abolish it in my own state.

P. H. Costello presented a paper on "The Board of Pharmacy Should Designate the Medicinal Preparations to Be Sold by General Merchants." This paper was discussed by Messrs. King, Wilhelmi, Mather, Swain, Walton, Costello and Dargavel.[1] The paper was then received for publication.

THE BOARD OF PHARMACY SHOULD DESIGNATE THE MEDICINAL PREPARATIONS TO BE SOLD BY GENERAL MERCHANTS.

BY P. H. COSTELLO, COOPERSTOWN, N. D.

If it is the desire of this group to discuss and determine the advisability of attempting to confer on Boards of Pharmacy, through legislation, the authority to designate what drugs and medicines may be sold by other than pharmacists, I am only prepared to give you our experiences in North Dakota. We have such authority by legislative enactment; factors leading up to the enactment of this legislation, and it would seem more acceptable and a better weapon for enforcement officials (Boards) than the vague exemptions, general exemptions over a certain distance or enumerated lists of exemptions generally found in statutes. I suppose the fact we have been granted such authority is the reason I have been asked to say something about it. I do not know if ours is the first instance of a legislature granting this authority to a Board of

[1] The decision of the Minnesota Supreme Court, restricting to pharmacists the distribution of Milk of Magnesia, was discussed by Mr. John W. Dargavel, secretary of the Minnesota Board of Pharmacy. This paper created a great deal of interest, and was discussed fully. Editorial reference will be found in the August JOUR. A. PH. A., pages 738, 739.

Pharmacy and, since it is a new measure with us, anything I might say is based upon conclusions previously drawn, which caused me to work for its enactment.

Any group charged with the enforcement of a law is interested in the privileges granted and restrictions imposed by that law so it can perform their duties. Pharmacy laws may be very specific or very vague but they should be specific, if enforcement is to be carried out without having to resort to the courts to interpret the intent of the law. Resorting to courts is a slow and uncertain method of establishing one's position, if it can be done otherwise. Referring to our own state it would seem our sections 475 and 476 are specific enough in that dispensing, compounding and sale of drugs are restricted to pharmacists. Drug stores are well defined and require a registered pharmacist in charge. Advertising by, or the use of, the word "drug" is restricted to pharmacists and drug stores. In section 499 we have some exemptions such as physicians supplying their own patients, and the manufacture and sale of proprietary medicines in original packages. These are specific enough and possibly there should be no other exemptions. The fact that we are discussing what drugs should be sold by general dealers is evidence that it is being permitted or the privilege is being demanded, and, if laws do not provide for it, recourse to legislation is taken. Such was our case. An amendment, reading "provided dealers over two miles from a drug store shall be exempted from the restrictions of this act," was before the legislature. We had to recognize that distances between drug stores had increased. Many towns which previously had had a drug store and could no longer support one were forced to purchase all their drugs at another town, sometimes many miles distant. Our restrictions worked a hardship on residents of many localities. In a village ten to fifteen miles from a drug store one could purchase a proprietary medicine but such preparations as, Tincture of Iodine, Aromatic Spirit of Ammonia or Aromatic Cascara, which might be termed emergency needs, required on short notice, could not be purchased. Our problem, therefore was to have this corrected by the legislature in such a manner that we would still have a restrictive law, specific and enforceable, instead of what had been proposed. As finally amended our exemptions now provide for dealers over five miles from a drug store to secure an annual license to sell emergency drugs in original packages and authorizes the Board to designate these and add to or remove from the list.

"**§ 499, Who Exempt.** Nothing in this Act shall apply to or interfere with any practitioner of medicine who is duly registered as such by the State Board of Medical Examiners of this State, with supplying his own patients, as their physician, with such remedies as he may desire, nor does this Act apply to the exclusively wholesale business of any dealer, nor do general dealers come under the provisions of this Act so far as it relates to the keeping for sale of proprietary medicines in original packages, and such simple household remedies as may from time to time be approved for such sale by the State Board of Pharmacy; nor does this Act apply to registered or copyrighted proprietary medicines registered in the United States Patent Office, nor to the manufacture of proprietary remedies or the sale of the same in original packages by persons other than pharmacists; provided further, that any person of good moral character, over twenty-one years of age, who conducts a retail business at a place more than five miles from a drug store employing a registered pharmacist, may procure a license from the Board of Pharmacy upon application and payment to said Board of a fee of Three Dollars ($3.00) annually which shall permit such retailer to keep for sale and sell in original packages, in addition to the simple household remedies hereinbefore referred to, such other emergency medicines and poisons as may be deemed necessary and in the public interests, and which have been designated by the State Board of Pharmacy as saleable under such license. The license hereinbefore referred to shall be for a period of one year, commencing on July 1st, and ending on June 30th, following the date of the application, and shall apply to the location for which the same is issued and shall be posted in a conspicuous place at such location, and upon satisfactory proof to the State Board of Pharmacy of any violation of any law of the State of North Dakota, by such licensee in or upon said premises, it shall be the duty of the State Board to revoke same. The State Board of Pharmacy may likewise from time to time add to or eliminate from the approved list of simple household remedies and they may add to and eliminate from the approved list of emergency medicines and poisons, saleable under the license aforesaid, and notice of such alterations shall be given by publication in such manner as said Board may deem proper."

While there may be objections to this type of measure or ways of improving its form we are pleased to have it rather than the one proposed, for many reasons. In the first place it provides that the dealer must be over five miles from a drug store. This means that where there is a drug store there are no dealers selling drugs. I can see no reason for making any exemptions where there is a drug store and a qualified licentiate in pharmacy to serve a community. The distance itself can be determined by the necessity in any state. If a license were granted a dealer just five miles from a drug store, the greatest distance anyone would have to the dealer would be two and a half miles. Personally, I think five miles should be the minimum distance. Secondly,

the measure provides for licensing the dealers; this is a very necessary feature. It not only provides revenue to defray inspection costs and other expenses incurred but also furnishes a record of where drugs are sold. It is necessary that it be known where drugs are retailed so collections of them for testing in compliance with drug standards can be made from all places by the regulatory department or food and drug commissioner. As a third point to consider, the dealers who secure licenses can sell only original packages. If dispensing were permitted it would merely be a step to compounding and we would, in effect, be licensing pharmacists. It would be an unsafe practice wherein the last safeguard to the public would be removed. I may say that the only opposition to the original package provision was voiced by representatives of seed houses, elevators and dealers in agricultural insecticides who desired to sell in bulk. Lastly, the Board of Pharmacy has authority to designate what drugs and medicines shall be sold under the license and to revoke licenses for violation. It must be admitted this is experimental, but every other means of designating has proven futile.

It is almost an impossibility to place a definite list in the statute itself and have it acted favorably upon without additions or deletions which are objectionable. If this occurs the only relief is further legislation. The list itself may displease many who could influence legislators against the entire measure. Any such designation as "simple household remedies" or "emergency drugs" is not specific enough. The term "simple household drugs" was found in our old law and no one knew what these were. Under advice of the Attorney General we designated what we thought constituted such a class which would force anyone disagreeing with us to take the matter to court for settlement, but as time for another legislature approached the attempt to amend our exemptions was made. When the term "emergency medicines" was proposed to designate the additional exemptions the provision authorizing the Board to designate these was the only solution. And since the list may be changed by the Board it would seem to be a flexible measure, one in which changes can be made without going to another legislature. I believe it is necessary to have such changes, as may be necessary, made without continually legislating. Any board of pharmacy that functions properly should be competent to designate such emergency drugs as may be deemed necessary and in the public interest, if they are fit to determine who are competent to practice pharmacy. This statement may subject me to ridicule since I have placed before you the determination made by our Board on this question. It is to be regretted that the survey undertaken by Secretary Ford last spring was not completed and available for our use as a guide, but wherever we sought information for this purpose, none was available and we were compelled to solve our own problem as then and of course we can make corrections as necessary. For this reason I will appreciate any comments, criticism or discussion and the attitude of this group on this question.

(Additional copies of our measure and the regulations covering it may be had by anyone desiring them.)—P. H. Costello, Cooperstown, N. D.

In the absence of Mr. Fischelis, his paper on "A Survey of State Pharmacy Laws with Reference to the Sale of Drugs and Medicines by General Merchants," was presented by Chairman Swain and he read a letter from the author of the paper. At the request of Chairman Swain, the paper was read by Mr. Oslin and it was discussed by Messrs. Walton, Hayman and Swain.

A SURVEY OF STATE PHARMACY LAWS WITH REFERENCE TO THE SALE OF DRUGS AND MEDICINES BY GENERAL MERCHANTS.

BY ROBERT P. FISCHELIS.*

Regulation of the sale of drugs and medicines by persons who are not registered pharmacists or working under the immediate supervision of registered pharmacists constitutes one of the most perplexing problems confronting Pharmaceutical Law Enforcement Officials. The perplexity of the situation can be traced to a number of causes. Among these are faulty definitions or total absence of definitions for the loose terms used in many pharmacy laws; lack of uniformity in the provisions regulating the sale of drugs and medicines in the laws of various states, especially neighboring states; variations in the construction placed on such terms as household remedies, domestic remedies, grocers' drugs, commonly used drugs, etc., by the courts. The courts are in the same position as the Enforcement Officers, for they are endeavoring to in-

* Secretary and Chief Chemist, New Jersey Board of Pharmacy, Trenton, N. J.

terpret the intent of the respective legislatures. However, they have the advantage of being considered impartial, whereas the Pharmaceutical Law Enforcement Officer is usually considered biased in his point of view because of his suspected sympathy for the pharmacist, and his suspected antagonism toward general merchants who sell drugs of any kind. If the courts have been impartial in their decisions, then the Enforcement Officers have also been fair, for the general trend of court decisions has been toward safeguarding the public health by restricting sales of drugs and medicines to pharmacists, wherever the language of the law has permitted such an interpretation.

It is not hard for anyone familiar with what goes on in our state legislative halls to see clearly what has happened in every case where pharmacy laws show loopholes which make enforcement difficult, and require courts to render opinions that are not in the interest of the protection of the public, as regards safeguarding the sale of drugs and medicines. The loopholes occur as the result of compromises made in the heat of legislative battles brought on by high pressure exerted upon the lawmakers from both sides of the fence. The patent medicine interests, with their camp followers, consisting largely of flavoring extract manufacturers who handle so-called "household remedies" as a side line, and the talented legal and technical hirelings of both, pull the legislator one way toward the side of no restrictions whatever. The pharmacists, generally disinclined to stoop to unethical procedures and depending largely on volunteer aid, try to pull the legislator toward some safe and sane regulation. The legislator may be entirely honest and willing to do the right thing, but in most instances, he asks himself, "What is truth?", and being unable or unwilling to take the time to study the situation from the standpoint of the public welfare in the midst of the mass of what is to him more important legislation, suggests a compromise, and then the skilful jugglers of words get in their work. They frequently succeed in making high-sounding provisions of the law innocuous, or cripple phrases in such a manner that a court battle is sure to follow. Thus the controversy proceeds from the legislative halls to the court room, and as a result we have a variety of court decisions and a problem which continues to remain unsolved.

It has appeared to the author of this paper that the first step toward improving the situation would be to gather in one place the legal requirements now in effect in the forty-eight states and the District of Columbia with reference to the sale of drugs and medicines by general merchants. If it were found that any single state has a provision in its laws on this subject that is ideal, we could all strive to secure similar legislation. If no state has an ideal provision on the subject, we could, perhaps, select the best provisions of a number of laws, and compile a model which we would all endeavor to imitate. At any rate, a compilation of information showing the present status of the matter will be helpful to the student of the subject, and will, perhaps, prove a revelation to those serene individuals among us who blame the encroachment of general merchants into the domain of pharmacy, on faulty law enforcement.

We have compiled the following:

1. A brief statement of the provisions of the respective state pharmacy laws regarding sales of drugs and medicines by others than registered pharmacists and assistant pharmacists.

2. A condensed table summarizing the provisions of state pharmacy laws referring to sales of drugs and medicines by general merchants.

3. A complete list of drugs, medicines and poisons, exclusive of patent and proprietary products, mentioned in the various state pharmacy laws as salable by general merchants, without reference to any restrictions such as permits required or not required.

4. A complete list of the drugs, medicines and poisons, exclusive of patent and proprietary products, mentioned in the various state pharmacy laws as salable by general merchants without permits, if sold in original, unbroken packages or compounded by a licensed pharmacist, or both.

5. A complete list of the drugs, medicines and poisons, exclusive of patent and proprietary products, mentioned in the various state pharmacy laws as salable by general merchants with permits, if sold in original, unbroken packages or compounded by a licensed pharmacist, or both.

6. A series of eighteen individual lists, arranged by states, and covering the drugs, medicines and poisons, exclusive of patent and proprietary products, mentioned in the laws of these states as salable by general merchants. The individual lists are divided into items salable with permits and items salable without permits.

There are only eighteen state laws which mention the specific drugs, medicines and poisons that may be sold by general merchants, either with or without permits.

The following summary of this tabular matter may be of interest:

1. A total of one hundred and thirty-seven different drugs, medicines and poisons are mentioned by name in the various state pharmacy laws as salable by general merchants, either with or without permits. This is in addition to drugs covered by such terms as "household remedies," "grocers' drugs," "domestic remedies," "drugs commonly sold in general stores," etc.

2. In thirty-five states the laws permit sales of patent and proprietary medicines without restrictions of any kind.

3. In seven states sales of patent and proprietary medicines by general merchants must be confined to non-poisonous preparations.

4. In two states the sale of patent and proprietary medicines by general merchants is confined to communities where there is no licensed pharmacist.

5. In three states the sale of patent or proprietary medicines by general merchants is not permitted, but in one of these, this provision of the law has been held unconstitutional.

6. In seven states anyone may sell so-called household remedies without restriction.

7. In five additional states anyone may sell non-poisonous so-called household remedies without restriction. In one of these, the medicines must be in original packages.

8. In thirteen additional states, anyone may sell so-called household remedies in original packages, but in two of these, individual doses may be sold on the premises.

9. In nine states, permits are required to sell so-called household remedies.

10. In thirteen states the patent or proprietary preparations sold by general merchants must be in original or sealed containers. Two state laws were recently amended to specifically provide for the sale on the premises of single doses of remedies salable by general merchants. All the other state laws make no mention of original packages or single doses.

It is not claimed that the data compiled in this paper are absolutely accurate. The latest copies of state pharmacy laws were asked for, but not always available. If inaccuracies are detected, the author will be glad to make corrections where necessary. In order to economize space, the eighteen tables (*6a–6r*, inc.) showing drugs, medicines and poisons, exclusive of patent or proprietary medicines, which may be sold by general merchants in the 18 states listing such items in their respective laws, are not printed here. However, the author has prepared these lists and will loan them to enforcement officers for reference on request.

Table 1.

A Brief Statement of the Provisions of the Pharmacy Laws of the Forty-Eight States and the District of Columbia Regarding Sales of Drugs and Medicines by General Merchants.

Alabama permits general merchants to sell patent and proprietary medicines, the "ordinary household remedies" and such drugs and medicines as may be specified by the Board of Pharmacy.

Arizona permits general merchants to sell patent and proprietary medicines, drugs, medicines or poisons in original packages, and "drugs, medicines and chemicals" listed in the law (see Table 6-A); and issues permits for a fee of $1.00 per annum to general dealers located not less than three miles from the store of a registered pharmacist, and where conditions do not warrant the employment of a registered pharmacist in the judgment of the Board, to sell certain drugs and "simple household remedies" listed in the law (see Table 6-A).

Arkansas permits general merchants to sell "grocers' drugs" and patent or proprietary medicines or "non-secret medicines."

California permits general merchants to sell patent and proprietary medicines and "drugs, medicines and chemicals" listed in the law (see Table 6-B); and issues permits for a fee of $5.00 per annum to general dealers located not less than three miles from the store of a registered pharmacist, and where conditions do not warrant the employment of a registered pharmacist in the judgment of the Board, to sell certain drugs and "simple household remedies" listed in the law (see Table 6-B).

Colorado permits general merchants to sell patent and proprietary medicines in unbroken, original packages, and commercial poisons, acids and chemicals in sealed packages.

Connecticut permits general merchants to sell "proprietary medicinal compounds or preparations put up separately in sealed packages and labeled and accompanied with directions for use and the name and address of the manufacturer or distributor," provided such medicines do not contain in excess of a certain amount of alcohol or narcotic drugs; and issues permits for a fee of $3.00 per annum to general merchants to sell "any drugs, chemicals or medicinal compounds or preparations" put up by a licensed pharmacist, such permit specifying additional "drugs, preparations, compounds and chemicals" which may be sold.

Delaware permits general merchants to sell "non-poisonous domestic remedies, patent or proprietary preparations and poisonous substances sold exclusively for use in the arts, or for use as insecticides, when such substances are sold in unbroken packages."

District of Columbia permits general merchants to sell patent and proprietary medicines in original packages and certain articles, in sealed packages, listed in the law (see Table 6-C); and issues permits to general merchants to sell poisonous substances used in the arts or as insecticides, in unbroken packages.

Florida permits general merchants to sell patent and proprietary medicines, "and drugs, medicines and chemicals" put up by pharmacists, in original packages, and certain articles listed in the law (see Table 6-D).

Georgia permits general merchants to sell "home remedies, not poison, and preparations commonly known as patent or proprietary preparations when sold in the original and unbroken package." (The law specifically states that the general merchants shall not be required to register.)

Idaho permits general merchants to sell "domestic non-poisonous remedies, patent or proprietary preparations which do not contain poisonous ingredients, and poisonous substances used in the arts and as insecticides in unbroken packages;" and permits general merchandise dealers in cities or rural districts where there is no licensed or assistant pharmacist to sell "such drugs and remedies in original packages as are labeled with the name of a registered pharmacist."

Illinois permits general merchants to sell, in original, unbroken packages, patent or proprietary preparations, "remedies which do not contain opium or coca leaves or any derivative thereof," and poisons used in the arts and as insecticides.

Indiana permits general merchants to sell "medicines of secret composition, and which are advertised to the general public, and popularly known as patent or proprietary medicines," providing they are non-poisonous, certain articles listed in the law (see Table 6-E) and certain other articles listed in the law (see Table 6-E) in unbroken packages if they are labeled with the name of a known pharmaceutical manufacturer or registered pharmacist; and issues permits for a fee of $3.00 per annum to general merchants located not less than two miles from a registered pharmacist, in communities of less than 500 inhabitants, to sell "such drugs and medicines as may be specified by the Board."

Iowa permits general merchants to sell "proprietary medicines or domestic remedies which are not in themselves poisonous or in violation of the law relative to intoxicating liquors," and completely denatured alcohol or concentrated lye, insecticides and fungicides in original packages.

Kansas permits the sale of "the usual domestic remedies and medicines in unbroken packages" by any general merchant who obtains a license as a "registered dealer" for a fee of $2.50 per annum.

Kentucky permits general merchants to sell patent or proprietary medicines in original packages; and permits "country stores in small places or rural districts" to sell "the usual non-poisonous domestic remedies and medicines and patent or proprietary medicines."

Louisiana permits general merchants to sell "proprietary medicines, popularly called patent medicines, and the commonly used standard medicines and poisons," if properly labeled. (Planters furnishing medicines to employees or persons leasing land from them are exempt from the provisions of the law.)

Maine permits general merchants to sell "non-poisonous domestic remedies and patent or proprietary preparations usually sold by grocers and others;" and permits general merchants in cities, towns or villages where registered apothecaries are not located to sell, in unbroken packages, the articles listed in the law (see Table 6-F).

Maryland permits general merchants to sell patent and proprietary medicines, "commonly used household or domestic remedies" in original packages, or in single doses to be consumed on the premises, and farm remedies and ingredients for spraying solutions.

Massachusetts permits general merchants to sell patent and proprietary medicines, "drugs and chemicals used in the arts, or as household remedies" listed in the law (see Table 6-G) and other articles listed in the law (see Table 6-G) if sold in original packages and put up by registered pharmacists, manufacturers or wholesale dealers in conformity with law.

Michigan permits general merchants to sell proprietary medicines and the articles listed in the law (see Table 6-H); and permits general merchants where there is no registered pharmacist located within five miles to sell "any drugs, medicines, chemicals, essential oils and tinctures which are put up and labeled by a registered pharmacist" in original, unbroken packages, and other articles listed in the law (see Table 6-H).

Minnesota permits general merchants to sell patent and proprietary medicines and the articles listed in the law (see Table 6-I); and permits general merchants located more than two miles from a drug store operated by a registered pharmacist to sell "any commonly used medicine or poison which has been put up for such sale by a registered pharmacist."

Mississippi permits general merchants to sell patent or proprietary medicines.

Missouri permits general merchants to sell patent and proprietary medicines, and poisonous substances to be used for commercial purposes in unbroken packages; and permits general merchants in any locality where there is no licensed pharmacist or assistant pharmacist to sell the "ordinary household remedies and such drugs or medicines as may be specified by the Board of Pharmacy."

Montana permits general merchants to sell "patent or proprietary medicines in original packages, when plainly labeled, and such non-medicinal articles as are usually sold by general merchants;" and permits general merchants in towns where there is no regularly licensed pharmacist to sell "such drugs, medicines, pharmaceutical or proprietary medicinal preparations in original and plainly labeled packages as the public may require."

Nebraska permits general merchants to sell patent or proprietary medicines, and denatured alcohol or concentrated lye, insecticides and fungicides in original packages. (Licensed physicians in towns of 350 inhabitants or less, not less than ten miles from a registered pharmacist, are exempt from the provisions of the law.)

Nevada permits general merchants to sell the "drugs, medicines and chemicals" listed in the law (see Table 6-J); and issues permits for a fee of $8.00 per annum to general merchants in rural districts to sell the "simple household remedies and drugs" listed in the law (see Table 6-J).

New Hampshire permits general merchants to sell proprietary remedies in original packages, "drugs and medicines when intended for agricultural, technical and industrial use," the articles listed in the law (see Table 6-K) and certain other articles listed in the law if sold in original packages and put up under the direction of a registered pharmacist (see Table 6-K).

New Jersey permits general merchants to sell non-poisonous patent or proprietary medicines; and permits general merchants in rural districts to sell "simple non-poisonous domestic remedies."

New Mexico permits general merchants in communities where there is no registered pharmacist to sell patent or proprietary medicines, "chemicals used in mining," insecticides and "common household drugs."

New York permits general merchants to sell proprietary medicines and certain articles listed in the law (see Table 6-L); and issues permits for a fee of $3.00 per annum to general merchants in places of a thousand inhabitants or less, not less than three miles from a pharmacy, to sell "medicines and certain classes of poisons only in original packages and put up by a licensed pharmacist."

North Carolina permits general merchants in three counties to sell "non-poisonous domestic remedies, non-poisonous patent or proprietary preparations," piosonous substances for commercial use in unbroken packages and the articles listed in the law (see Table 6-M); elsewhere in the state the same provisions apply only to localities where there is no established drug store.

North Dakota permits general merchants to sell "proprietary medicines in original packages and the simple household remedies" listed in the law (see Table 6-N). (Drugs and medicines

may be dispensed and physicians' prescriptions compounded in any established hospital to the patients therein by or under the direct supervision of a resident interne physician.)

Ohio permits general merchants to sell patent or proprietary medicines, certain articles listed in the law (see Table 6-O) and other articles listed in the law if sold in original packages and put up by a registered pharmacist (see Table 6-O).

Oklahoma permits general merchants to sell such "poisons, acids and chemicals as are regularly used in agriculture, mining and the arts," in sealed packages; and permits general merchants in towns of less than 300 inhabitants, where there is no licensed pharmacist, to sell "patent and proprietary medicines and such medicines, compounds and chemicals as are required by the general public and in form and manner prescribed by the Board of Pharmacy," and the same provision applies to "country merchants."

Oregon permits general merchants to sell patent or proprietary medicines and any "household remedies and medicines" in original packages; also certain poisons which are listed in the law, in original packages.

Pennsylvania permits general merchants to sell "proprietary medicines and commonly used household drugs when the same have been put up by pharmacists, manufacturing pharmacists, wholesale grocers or wholesale druggists," in original packages, and in single doses to be consumed on the premises.

Rhode Island permits general merchants to sell "proprietary medicines, popularly called patent medicines, and the ordinary household remedies and drugs," and medicines and poisons for use in the arts.

South Carolina permits general merchants to sell "medicines in original packages already prepared for use;" and the Act does not prohibit "country merchants from handling lye, canned goods and such drugs as they now handle."

South Dakota.—The Pharmacy Law contains no exemptions authorizing the sale of proprietary medicines by persons other than pharmacists.

Tennessee permits general merchants to sell patent or proprietary medicines, the articles listed in the law (see Table 6-P) and certain other articles listed in the law when put up by a "regular" pharmacist in boxes and bottles bearing his label (see Table 6-P).

Texas permits general merchants to sell patent or proprietary medicines in original packages, drugs or medicines in original packages, and insecticides and harmless chemicals used in the arts, if properly labeled.

Utah permits general merchants to sell "insecticides, fungicides and other poisons intended for use in the destruction of animal and vegetable pests."

Vermont permits general merchants to sell patent and proprietary medicines, "drugs, medicines and poisons, other than on prescriptions," and inseciticides and substances for use in the arts.

Virginia permits general merchants to sell proprietary medicines in original packages, the "ordinary non-poisonous domestic remedies" in original packages, insecticides and commercial poisons under proper regulation, the articles listed in the law (see Table 6-Q) in original packages, and such other medicines as the Board may permit. (Granular effervescing and proprietary liquid preparations and beverages claiming curative properties may be dispensed anywhere; and homeopathic medicines may be sold by homeopathic pharmacists.)

Washington permits general merchants to sell patent and proprietary medicines in sealed packages; and issues permits for a fee of $6.00 per annum to general merchants to sell "commonly used medicines in original packages of manufacturer or in packages put up by a registered pharmacist in the manner prescribed by the Board of Pharmacy."

West Virginia permits general merchants to sell patent or proprietary medicines and "such ordinary drugs and dyestuffs as are usually sold in a country store," providing these do not include any of the poisons named in the schedules of the law, or any intoxicating liquors.

Wisconsin permits general merchants to sell proprietary medicines in sealed-packages, Paris Green and the articles listed in the law (see Table 6-R); and issues permits for a fee not to exceed $5.00 per annum to general merchants in rural districts not less than three miles distant

from a registered or assistant pharmacist to sell such drugs and medicines as may be specified in the permit.

Wyoming permits general merchants to sell patent or proprietary medicines.

TABLE 2.—A CONDENSED TABLE SUMMARIZING THE PROVISIONS OF THE PHARMACY LAWS OF THE FORTY-EIGHT STATES AND THE DISTRICT OF COLUMBIA REGARDING SALES OF DRUGS AND MEDICINES BY GENERAL MERCHANTS.

Sale of Proprietary and/or Patent Medicines Permitted by General Merchants* under Conditions Indicated:

State.	No restrictions.	Original packages only.	Non-poisonous products only.	In rural districts only.
Alabama	x	..	..	..
Arizona	x	..	..	..
Arkansas	x	..	..	..
California	x	..	..	..
Colorado	..	x	..	..
Connecticut	..	x	..	..
Delaware	..	..	x	..
District of Columbia	..	x	..	..
Florida	x	..	..	..
Georgia	..	x	x	..
Idaho	..	..	x	..
Illinois	..	x	..	..
Indiana	..	..	x	..
Iowa	..	..	x	..
Kansas†	..	..		..
Kentucky	..	x	..	..
Louisiana	x	..	..	..
Maine	..	..	x	..
Maryland	x	..	..	..
Massachusetts	x	..	..	..
Michigan	x	..	..	..
Minnesota	x	..	..	..
Mississippi	x	..	..	..
Missouri	x	..	..	..
Montana	..	x	..	..
Nebraska	x	..	..	..
Nevada	Sales not permitted		..	..
New Hampshire	..	x	..	..
New Jersey	..	..	x	..
New Mexico	..	..	..	x
New York	x	..	..	..
North Carolina††	..	..	x	..
North Dakota	..	x	..	..
Ohio	x	..	..	..
Oklahoma	..	..	..	x
Oregon	x	..	..	..
Pennsylvania	x	..	..	..
Rhode Island	x	..	..	..
South Carolina	..	..	..	..
South Dakota	Sales not permitted**			
Tennessee	x	..	..	..
Texas	..	x	..	..
Utah	Sales not permitted			
Vermont	x	..	..	..
Virginia	..	x	..	..

Washington	..	x	..	..
West Virginia	x	..	..	..
Wisconsin	..	x	..	..
Wyoming	x	..	..	..

* The term General Merchant is used to indicate anyone permitted to sell drugs and medicines who is not a registered pharmacist or assistant pharmacist.

** The Supreme Court of the State has declared this unconstitutional.

† Permit required (fee $2.50 per annum).

†† This applies only in three counties; in all other counties it applies only to towns where there is no established drug store.

TABLE 2-A.—A CONDENSED TABLE SUMMARIZING THE PROVISIONS OF THE PHARMACY LAWS OF THE FORTY-EIGHT STATES AND THE DISTRICT OF COLUMBIA REGARDING SALES OF DRUGS AND MEDICINES BY GENERAL MERCHANTS.

Sale of Certain Non-Proprietary Drugs and Medicines Permitted by General Merchants under Conditions Indicated:

State.	Anywhere in the state.	In rural districts only.	Sale of some remedies permitted anywhere.	Sale of some remedies permitted in rural districts only.	Permit required to sell anywhere in state.	Permit required for rural district sales only.	Price of permit.	All salable items listed in the law.	All items salable in rural districts listed in the law.	All items salable in rural districts specified by Board of Pharmacy.	Board of Pharmacy authorized to specify some items.
Alabama	x	..	..	..	..	..	..	..	..	..	x
Arizona	..	..	x	x	..	x	$1.00	x	..	..	..
Arkansas	x	..	..	..	..	..	..	..	..	..	..
California	..	..	x	x	..	x	$5.00	x	..	..	x
Colorado	Sales not permitted										
Connecticut	x[1]	..	..	..	x	..	$3.00	..	..	..	..
Delaware	x[2]	..	..	..	..	..	..	..	..	..	..
District of Columbia	x[1]	..	..	..	..	..	..	x	..	..	..
Florida	x[1]	..	..	..	..	..	..	x	..	..	..
Georgia	x[2,1]	..	..	..	..	..	..	..	..	..	..
Idaho	..	..	x[2]	x	..	..	..	..	..	..	..
Illinois	x[1]	..	..	..	..	..	..	..	..	..	..
Indiana	..	..	x	x	..	x	$3.00	x	..	x	..
Iowa	x[2]	..	..	..	..	..	..	..	..	..	..
Kansas	x[1]	..	..	..	x	..	$2.50	..	..	..	..
Kentucky	..	x[2]	..	..	..	..	..	..	..	..	..
Louisiana	x	..	..	..	..	..	..	..	..	..	..
Maine	x[2]	..	..	x	..	..	..	..	..	x	..
Maryland	x[1]	..	..	..	..	..	..	..	..	..	..
Massachusetts	x[1]	..	..	..	..	..	..	x	..	..	..
Michigan	..	..	x	x	..	..	..	x	..	..	..
Minnesota	..	..	x	x	..	..	..	x	..	..	..
Mississippi	Sales not permitted										
Missouri	..	x	..	..	..	..	..	..	..	x	..
Montana	..	..	x	x[1]	..	..	..	..	..	..	..
Nebraska	Sales not permitted										
Nevada	..	..	x	x	..	x	$8.00	x	..	..	..
New Hampshire	x	..	..	..	..	..	..	x	..	..	..
New Jersey	..	x[2]	..	..	..	..	..	..	..	..	..
New Mexico	..	x	..	..	..	..	..	..	..	..	..
New York	..	..	x	x	..	x	$3.00	x	..	..	..

North Carolina*	*x[2]	..	..	..	..	..	..	x	..	..	..
North Dakota	x[1]	..	..	..	..	..		x	..	..	..
Ohio	x[1]	..	..	..	..	..	..	x	..	..	..
Oklahoma	..	..	x[1]	x[1]	..	..	..	..	..	..	..
Oregon	x[1]	..	..	..	..	..	..	..	..	..	..
Pennsylvania	x[1]	..	..	..	..	..	..	..	..	..	..
Rhode Island	x	..	..	..	..	..	..	..	..	..	..
South Carolina	..	..	x	x	..	..	..	..	..	..	..
South Dakota	Sales not permitted										
Tennessee	x	..	..	..	..	..	..	x	..	..	..
Texas	x[1]	..	..	..	..	..	..	x	..	..	..
Utah	Sales not permitted										
Vermont	x	..	..	..	..	..	..	..	..	..	..
Virginia	x[1]	..	..	..	..	..	..	x	..	..	x
Washington		x	..	..	x	..	$6.00	..	..	..	..
West Virginia	..	x	..	..	..	..	..	..	..	..	..
Wisconsin	..	..	x[1]	x[1]	..	x	$5.00	x	..	x	..
Wyoming	Sales not permitted										

* This applies only in three counties; in all other counties it applies only to towns where there is no established drug store.

[1] In original packages only.

[2] Non-poisonous preparations only.

TABLE 3.

A complete list of articles, exclusive of patent and proprietary products, mentioned in the combined pharmacy laws of the various states as salable by general merchants:

1. Glauber Salts
2. Condition Powders
3. Bay Rum
4. Alum
5. Chloride of Lime
6. Sheep Dip
7. Blue Stone
8. Vaseline
9. Cream of Tartar
10. Essence of Peppermint
11. Castor Oil
12. Glycerine
13. Borax
14. Flaxseed
15. Turpentine
16. Carbonate of Soda
17. Ammonia
18. Bicarbonate of Soda
19. Witch-Hazel
20. Sulphur
21. Insect Powder
22. Fly Paper
23. Essence of Jamaica Ginger
24. Copperas
25. Squirrel, Ant and Gopher Poison
26. Poultry Vermifuge
27. Essence of Ginger
28. Olive Oil
29. Sal Soda
30. Brimstone
31. Senna Leaves
32. Paregoric
33. Hive Syrup
34. Syrup of Tolu
35. Sweet Spirit Nitre
36. Tincture of Aconite
37. Asafœtida
38. Sal Ammoniac
39. Pepper
40. Sweet Oil
41. Syrup of Ipecac
42. Syrup of Squill
43. Camphor
44. Essence of Wintergreen
45. Licorice
46. Saltpetre
47. Blue Vitriol
48. Sage
49. Spirit of Turpentine
50. Epsom Salt
51. Spirit of Camphor
52. Comp. Cathartic Pills
53. Quinine
54. Paris Green
55. White Hellebore
56. Concentrated Lye
57. Spices
58. Perfumes
59. Tobacco
60. Dyestuffs
61. Flaxseed Meal
62. Gum Tragacanth
63. Litharge
64. Perox. of Hydrogen
65. Rhubarb
66. Sulphate of Copper
67. Slippery Elm Bark
68. Citric Acid
69. Cottonseed Oil
70. Gelatine
71. Hops
72. Lime Water
73. Magnesia
74. Petrolatum
75. Rochelle Salt
76. Cod Liver Oil
77. Ginger
78. Gum Arabic
79. Hyposulphite of Soda
80. Linseed Oil
81. Phosphate of Soda
82. Rosin
83. Senna
84. Sugar of Milk
85. Tartaric Acid

86. Zinc Oxide
87. Non-poisonous flavoring essences and extracts
88. Laudanum
89. Sugar of Lead
90. Essence of Cinnamon
91. Tincture of Iron
92. Quinine Pills
93. Carbolic Acid
94. Oxalic Acid
95. Carbonate of Ammonia
96. Water of Ammonia
97. London Purple
98. Logwood
99. Gum Arabic
100. Arsenate of Lead
101. Arsenious Oxide
102. Rolled Sulphur
103. Sublimed Sulphur
104. Sodium Arsenite
105. Liniment Camphor
106. Oil of Spike
107. Butter Color
108. Beef, Iron and Wine
109. Talcum Powder
110. Court Plasters
111. Petroleum Jellies
112. Malt Extract
113. Seidlitz Powders
114. Toilet Waters
115. Composition Powder
116. Oil of Origanum
117. Extract of Beef
118. Rock Candy
119. Bay Rum
120. Turmeric
121. Porous Plasters
122. Calomel Tablets
123. Godfrey's Cordial
124. Gum Asafœtida
125. Sulphate of Quinine
126. Aspirin
127. Haarlem Oil
128. Beeswax
129. Fuller's Earth
130. Moth Balls
131. Plaster Paris
132. Formaldehyde
133. Juniper Berries
134. Oil of Lemon
135. Indigo
136. Wood Alcohol
137. Denatured Alcohol

TABLE 4.

A complete list of articles exclusive of patent and proprietary products, mentioned in the combined pharmacy laws of the various states as salable by general merchants *without* permits, if sold in original, unbroken packages or compounded by a registered pharmacist, or both.

1. Copperas
2. Paris Green
3. London Purple
4. Tincture of Iron
5. Cream of Tartar
6. Bluestone
7. Sweet Spirit Nitre
8. Quinine
9. Calomel
10. Carbolic Acid.
11. Paregoric
12. Essence of Peppermint
13. Syrup of Ipecac
14. Syrup of Squill
15. Essence of Cinnamon
16. Tincture of Arnica
17. Spirit of Camphor
18. Comp. Cathartic Pills
19. Hive Syrup
20. Syrup of Tolu
21. Number Six
22. Essence of Ginger
23. Quinine Pills
24. Comp. Licorice Powder
25. Tannin
26. Tr. of Iodine
27. Chloroform Liniment
28. Stronger Water of Ammonia
29. Extract Cascara
30. Soda Mint
31. Tr. of Aconite
32. Sweet Tr. Rhubarb
33. Sulphuric Ether
34. Ointment Oxide of Zinc
35. Soda Mint & Pepsin
36. Sodium Phosphate
37. Aromatic Tr. Rhubarb
38. Aromatic Spt. Ammonia
39. Sulphate of Quinine
40. Chlorate of Potassium
41. Nitric Acid
42. Cyanide of Potassium
43. Sulphate of Zinc
44. Essence of Jamaica Ginger
45. Muriatic Acid
46. Sulphuric Acid
47. Mercury
48. Insecticides
49. Flavoring Essences or Extracts
50. Oxalic Acid
51. Arsenic
52. Phosphorus
53. Ammonia Water
54. Bichloride of Mercury
55. Borax
56. Camphor Gum
57. Copper Sulphate
58. Fowler's Solution
59. Iron Sulphate
60. Camphorated Oil
61. Castor Oil
62. Cotton Seed Oil
63. Olive Oil
64. Mineral Oil
65. Sal Soda
66. Sal Ammoniac
67. Concentrated Lye
68. White Hellebore

TABLE 5.

A complete list of articles exclusive of patent and proprietary products, mentioned in the combined pharmacy laws of the various states as salable by general merchants *with* permits, if sold in original, unbroken packages or compounded by a registered pharmacist, or both.

1. Tincture of Arnica
2. Spirit of Camphor
3. Almond Oil
4. Extract Witch-Hazel
5. Syrup of Ipecac
6. Syrup of Rhubarb
7. Hive Syrup
8. Sweet Spirit Nitre
9. Epsom Salt

10. Senna Leaves
11. Seidlitz Powders
12. Cathartic Pills
13. Caraway Seed
14. Moth Balls
15. Tincture of Iron
16. Rochelle Salt
17. Carbonate of Magnesia
18. Quinine
19. Chamomile Flowers
20. Chlorate of Potash
21. Plasters
22. Peroxide of Hydrogen
23. Asafœtida
24. Saltpetre
25. Ointments
26. Gum Camphor
27. Anise Seed
28. Salves
29. Copperas
30. Saffron

Tables 6-A to 6-R, inclusive, are not printed because of lack of space. They may be had by applying to the author.

Upon motion, duly seconded, the Conference approved sending a resolution to the AMERICAN PHARMACEUTICAL ASSOCIATION concerning the manufacture and sale of Drugs and Medicines.

At 12:40, upon motion, duly seconded, the Conference adjourned until 2:00 P.M., Friday, July 31, 1931.

R. L. Swain, *Chairman.* M. N. FORD, *Secretary.*

SECOND SESSION.

The Second Session of the third annual meeting of the Conference of Pharmaceutical Law Enforcement Officials was called to order by Chairman Swain in Remington Hall, Hotel Columbus, Miami, Florida, at 2:00 P.M. with the following present:

E. D. Oslin, Arkansas; W. M. Hankins, M. H. Doss, H. R. Monroe, Florida; R. C. Wilson, Georgia; G. E. Bond, Illinois; John A. J. Funk, F. C. McCullough, Indiana; Geo. Judisch, J. W. Slocum, Iowa; George Wilhelmi, Kentucky; E. G. Eberle, E. F. Kelly, R. L. Swain, Maryland; R. W. Fleming, Nevada; F. C. A. Schaefer, New York; J. G. Beard, North Carolina; F. H. King, M. N. Ford, Ohio; L. L. Walton, Pennsylvania; Lester Hayman, West Virginia, and Dr. Cannon of the U. S. Public Health Service.

Chairman Swain appointed a nominating committee consisting of Messrs. L. L. Walton, George Judisch and John A. J. Funk.

Chairman Swain presented a paper on "The Legal Significance of the Maryland Prescription Survey." The paper was discussed by Messrs. Judisch, Walton and Monroe.

THE LEGAL SIGNIFICANCE OF THE MARYLAND PRESCRIPTION SURVEY.

BY ROBERT L. SWAIN.

The Maryland prescription survey,[1] a report of which has been presented before the joint meeting of the Scientific Section and the Section on Practical Pharmacy and Dispensing of the AMERICAN PHARMACEUTICAL ASSOCIATION, has raised in my mind many collateral questions, all of which I believe will be of interest to the members of this Conference.

First of all, I have been much impressed, and at times as much embarrassed, by the lack of authoritative data dealing with the extent, nature and value of pharmaceutical work. This is all the more remarkable when it is recalled that pharmacy is a profession of great antiquity and that its professional service has always been looked upon as a service of great value and distinction. Pharmacy laws are designed in the public interest. Through them it is sought to protect the public by making available a professional pharmaceutical service which shall be safe, efficient and dependable. That the purpose of the law shall be accomplished is, of course, the chief function of the members of this Conference. While some may appear to labor under the impression, or possibly the delusion, that the advancement of the commercial phases of the drug store is the objective of law enforcement, enforcement officials, themselves, know that this must be merely an incidental result, if indeed it is to result at all. The public interest is the supporting principle upon which pharmacy laws rely, and it is in the public interest that they must be enforced.

The commercial side of the drug store has been amply surveyed. It is quite true that every commercial department of the drug store has been subjected to an exhaustive study. The total volume of sales resulting from these side lines is known. The value which they attain

[1] See page 938, September JOUR. A. PH. A.

in the drug stores of the country as a whole may be easily ascertained. The cost of doing business, the average turn, the relationship of inventory to sales, the relationship of sales to profits, the profitable lines and the unprofitable lines, the loss from bad accounts, these and many other commercial problems of the drug store have been closely analyzed. In this work large drug interests have coöperated through the Druggists' Research Bureau, and some of the leading universities of the country have lent their aid.

Right at the outset, let it be understood that there is no disposition to criticize the agencies by whom these commercial and economic studies have been carried on. Modern business demands facts, and facts can be brought to light only by systematic and continuous effort. But in the earnestness with which these commercial studies have been carried on has not the basic side of pharmacy been made somewhat incidental? Hasn't a large economic superstructure been erected without first seeing to it that the foundation is sufficiently secure? In other words, has there been any effort to measure the professional service which pharmacy renders?

Very little authoritative data is available to show the real extent of professional practice or to determine its public health value. Even the most elementary questions remain unanswered. For instance, what is the extent of prescription practice in the average pharmacy? To what degree do pharmacists practice pharmacy? What is the public health value of professional pharmacy to the community? These are but random questions, and yet their significance is immediately apparent. Of course, each of us is certain that pharmacy is tremendously important, that it carries on an essential public service, and fills an exacting public need. But upon what does our certainty depend? Have we the data, the information, the convincing proof by which to make others, who know nothing of pharmacy, equally as certain? Whenever the question arises, aren't we reduced to assertions of our beliefs rather than facts? And how often will belief be accepted as of the same value as facts?

The Maryland prescription survey was undertaken to provide the facts. Each drug store in Maryland was personally visited by an official representative of the Maryland State Department of Health, and with the consent and assistance of the pharmacists themselves, the total number of physicians' prescriptions compounded and dispensed during 1930 was counted, compiled and tabulated. I shall not tire you with any details of how the work was actually done, other than to state that the work as it progressed was discussed with officials of the Bureau of the Census for the purpose of having it conform to accepted statistical standards. The project was carried out under my direction and supervision, and I believe the results shown can be accepted as accurate to a very high degree. While many highly interesting conclusions have been drawn from this survey, I need only state here that the total number of prescriptions were found to be 3,347,226; that each drug store was found to be filling 5018 prescriptions per year; that the average per man, woman and child in the state was two prescriptions per year, and that from these figures the huge total of 263,008,000 is shown as representing the number of prescriptions compounded by the drug stores of the country as a whole.

What is of great significance to the work of this Conference is that the survey establishes the real public health value of pharmacy. In Maryland, alone, each drug store is called upon over five thousand times a year to provide medicines for the treatment of persons actually ill. Be it in the large centres of population and industry or in the quiet villages and hamlets of the state, the pharmacist is called upon over five thousand times a year to render a highly specialized and highly important public service. In other words, the public health makes over five thousand demands a year upon the average drug store of the state. In all sincerity does any other public health profession touch the public interest any more vitally?

It is to be remembered, however, that prescription compounding and dispensing, important and essential as it is, constitutes only one phase of professional pharmaceutical work. It does not embrace the numberless occasions that the pharmacist is called upon to prepare and dispense medicinal compounds, sell poisons, and do the many other things embraced in store routine, but which, in the ultimate, are of real public interest. I am wondering just how much even we would be impressed if an adequate picture of professional pharmaceutical practice were actually presented.

I believe that we should immediately begin a study of this matter. The number of prescriptions compounded in each state should be ascertained. In addition, we should endeavor to learn all that can be learned of the other phases of pharmaceutical practice. The coöperation

of a sufficient number of pharmacists should be obtained and can be obtained to carry out a study for this purpose. Forms should be drawn up, upon which this data might be compiled. Let them be as simple and as uninvolved as possible, but let them depict professional pharmacy. Let them set out the times per day that professional work is done. Let them show the amount of medicinal preparations manufactured, the extent of compounding and dispensing, the sale of poisons, the sale of sick room requisites demanding professional skill and competency. In other words, let them show professional pharmacy. That this is a stupendous task is not denied. That it will entail a great burden upon the members of this Conference and upon the pharmacists coöperating must also be admitted. However, the legal significance of such data would be profound. It would answer many unanswered questions and, in my judgment, could be made the basis of pharmacy laws much more efficient than those now in effect.

For instance, the pharmacy law of Maryland as well as of several other states requires that a pharmacy shall be in charge of a pharmacist at all times. Is this a wise or defensible requirement? When this requirement has been before the courts, the courts have refused to sustain it on the ground that it is an unreasonable requirement. But with all due deference to the courts, is the requirement unreasonable? The answer is obviously to be found in the study of professional pharmaceutical practice. If the facts are shown to be what I instinctively feel they will be shown to be, I am certain that instead of being an unreasonable requirement, public opinion will demand that a pharmacy be properly controlled at all times. Such a study, in my opinion, will show that at practically every hour of the day the pharmacy is required to perform services so closely affecting the public welfare, that a due regard for the public interest will demand professional competency at all times.

It has been objected, of course, that to compel a pharmacy to be in charge of a pharmacist at all times is unnecessary and unreasonable because compliance with the law would compel many drug stores to close, thus reducing the number of drug stores in operation. In many of our cities and towns, such a reduction is a consummation devoutly to be wished. At any rate, this is an economic question and not one of public health.

I earnestly urge that this Conference endorse a study, in the fullest sense, of professional pharmacy. The legal significance of such a study will be profound. It will result in placing pharmacy firmly in the group of public health agencies. It will substitute facts for opinion. It will supply authoritatively the data from which a sounder legal status may be brought about, and from which professional pharmacy may be more intelligently developed.

"The need of reasonable restrictions in the sale of Drugs and Medicines" was presented by Mr. Walton in the absence of Mr. Woodside. Reference was made to their legislation and same was discussed by Messrs. Funk, King, Swain and Judisch.

"Enforcement[1] of the Kentucky Pharmacy Law by Injunction" was presented by Mr. Wilhelmi of the Kentucky Board, and he presented a decision of the Kentucky Court of Appeals sustaining the Board of Pharmacy. There was a demand for copies of the Court's decision and the Secretary promised members of the Conference, he would supply them. Editorial reference will be found in August JOUR. A. PH. A., pages 739–740.

Mr. Monroe of Florida explained their method of pharmacy law enforcement and discussion was entered into by Messrs. King, Judisch, Wilhelmi, Walton, Funk, Oslin, Schaefer, Hayman and McCullough. Mr. Walton suggested information be gathered showing pharmacy-law violations for different offenses.

Upon motion of Mr. Walton, seconded by Mr. Oslin, the Chairman was authorized to edit the report of the Conference meetings for publication.

Upon motion of Mr. King, seconded by Mr. Judisch, the Chairman and Secretary were authorized to act in regard to publishing and distributing the reports of the Conference meetings.

Upon motion of Mr. Judisch, seconded by Mr. Schaefer, the Chairman and Secretary were authorized to decide on the advisability of securing some sort of newspaper clipping service.

Report of the Committee on Nominations was made by Mr. Walton as follows:

Chairman, R. L. Swain; *Secretary and Treasurer*, M. N. Ford; *Delegate to the House of Delegates*, Clair Allen.

Upon motion of Mr. Walton, seconded by Mr. Judisch, the report of the Committee on Nominations was adopted and the officers duly elected.

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[1] See appended paragraphs—end of Minutes.

Chairman Swain announced the reappointment of Messrs. Gilbert, Fischelis and King as the Finance Committee.

Mr. Walton proposed the Conference have a set of By-Laws submitted for the next annual meeting and the Chairman appointed Mr. Walton, a committee of one, to present same.

Upon motion of Mr. King, seconded by Mr. Walton, the Conference adjourned.

R. L. SWAIN, *Chairman.* M. N. FORD, *Secretary.*

NOTE: Since the Miami meeting, the Conference has distributed multigraphed copies of the following court decisions:

Commonwealth ex rel., Attorney General *vs.* Brown, decided by the Kentucky Court of Appeals, May 22, 1931.

This decision dealt with the enforcement of the Pharmacy Law by Injunction.

Stanley J. Hagues *vs.* New York State Board of Pharmacy, decided by the Supreme Court of Oneida County, New York, April 6, 1931.

This decision upheld the constitutionality of the New York Pharmacy Ownership Law.

State of Minnesota *vs.* F. W. Woolworth Company. Decided by the Minnesota Supreme Court, July 17, 1931.

This decision established that Milk of Magnesia can be sold by registered pharmacists only.—R. L. S.

Pharmacy Week window of L. S. Williams, Baltimore; it is an educational exhibit and many items of historical interest are displayed. Mr. Williams is a former president of Maryland Pharmaceutical Association; he is said to have the largest individual collection of show globes in this country.

Joyful Christmas and a Prosperous 1932.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1931–1932.

Office of the Secretary, 10 West Chase Street, Baltimore, Md.

LETTER NO. 5. November 25, 1931.

To the Members of the Council:

43. Time and Headquarters for the 1932 Meeting. Motion No. 7 (see Council Letters No. 3, page 1128, and No. 4 page 1129) has been carried and announcement has been made.

44. Local Secretary for 1932 Meeting. Motion No. 8 (see Council Letter No. 4, page 1129) has been carried and Dr. Stanbury has been advised of his election.

45. Expression of Appreciation. Motion No. 9 (see Council Letter No. 4, page 1129) has been carried and the letter written to President Boyce.

46. Depository for Securities. Motion No. 10 (see Council Letter No. 4, page 1129) has been carried and the Maryland Trust Company is approved as a depository.

47. Safe Deposit Box. Motion No. 11 (see Council Letter No. 4, page 1129) has been carried and the certificate referred to has been executed and filed with the Maryland Trust Company.

48. Use of Text of N. F. V. Motion No. 12 (see Council Letter No. 4, page 1129) has been carried and Dr. Blayney has been advised.

49. Election of Members. Motion No. 13 (see Council Letter No. 4, page 1130) has been carried and applicants numbered 24 to 42, inclusive, are declared elected.

50. Western Reserve University Student Branch. Motion No. 14 (see Council Letter No. 4, page 1130) has been carried and the formation of this Branch and its Preamble and By-Laws are approved.

51. Contract for Printing and Mailing the Journal of the A. Ph. A. for 1932. The following letter has been received from Chairman DuMez of the Committee on Publications:

> "I have checked over the bids for publication of the JOURNAL, obtained by Editor Eberle, very closely, and I am unable to discover how we would benefit by changing the publisher at this time.
>
> "Some of the estimates are very near that of the present publisher, but the expenses in making a change would more than make up any difference.
>
> "Editor Eberle informs me that the service has been entirely satisfactory, and I therefore recommend to the Council that the contract for publishing the JOURNAL for the coming year be renewed with the Mack Printing Company."

(*Motion No. 15*) *It is moved by DuMez that the contract for printing and mailing the* JOURNAL *for 1932 be awarded to the Mack Printing Company of Easton, Penna.*

At the request of Chairman DuMez a vote is called for at this time but will be considered as tentative if there is objection.

52. Increase in Budget Appropriations. On account of the greater amount of material mimeographed in the offices of the ASSOCIATION during the current year, the appropriation for office supplies of $150 will not cover the cost. As a good part of the traveling expenses of Former President Christensen for the calendar year 1930 were paid in 1931, the appropriation for traveling expenses for the current year will not be sufficient. The appropriation for traveling expenses in 1930 was $1300 whereas only $846.76 was charged against it.

(*Motion No. 16*) *It is moved by Bradley that Budget Appropriation No. 6 for Office Supplies be increased by $100, and that Budget Appropriation No. 7 for Traveling Expenses be increased by $250.* The Budget as approved is printed on page 71 of the January 1931, issue of the JOURNAL.

53. Expenses of N. F. Subcommittees. Chairman Gathercoal has advised that the work of certain subcommittees on the Sixth Edition of the N. F. has now reached the stage where they require authorization to expend a certain amount for materials, for assistance in experimental work, and in the preparation of the monographs, etc. These expenses will be approved by the chairman of the Committee on N. F. and will be charged to the N. F. account.

At this time, Chairman Gathercoal recommends that $350 be made available to the Subcommittee on Solution Preparations, Chairman, H. A. Langenhan, for its expenses during 1932.

The recommendation is approved by the Chairman of Committee on Appropriations.

(*Motion No. 17*) *It is moved by Bradley that $350, or so much of this sum as may be required, be authorized for the expenses of the Subcommittee on Solution Preparations during 1932, and charged to the National Formulary account.*

54. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 43, Rafael G. Alfonzo, 3640 St. Aubin Ave., Detroit, Mich.; No. 44, Francis L. Bihn, 3675 W. Park Road, Cleveland, O. (Assoc.); No. 45, Reginald C. Brown, 1219 Union Ave., New York, N. Y.; No. 46, G. H. Bruehler, Jr., 11511 Mayfield Rd., Cleveland, O. (Assoc.); No. 47, Charles R. Burnett, 11511 Mayfield Rd., Cleveland, O. (Assoc.); No. 48, Marcos A. Caballero, Box 37, Girardot, Colombia, S. A.; No. 49, Charles C. Caruso, 16 Cooper Square, New York, N. Y.; No. 50, Silvio Dessy, Rivadavia 1745, Buenos Aires, Argentina; No. 51, J. J. Durrett, 745 5th Ave., New York, N. Y.; No. 52, Abraham Etkins, 2161 Douglass St., Brooklyn, N. Y.; No. 53, R. J. Fagg, Brown-Lee Bldg., Martinsville, Va.; No. 54, Albert George Gaal, 574 Manhattan Ave., Brooklyn, N. Y.; No. 55, George H. Gerloch, 4515 Woburn Ave., Cleveland, O. (Assoc.); No. 56, Michael G. Girbino, 11117 Woodland Ave., Cleveland, O. (Assoc.); No. 57, David M. Goldberg, 1246 Broadway, Lorain, O. (Assoc.); No. 58, M. Goldberg, 13012 Brackland Ave., Cleveland, O. (Assoc.); No. 59, William Jacob Greenberg, 3346 Steuben Ave., New York, N. Y.; No. 60, Theodore E. Gutkowski, 7417 Clement Ave., Cleveland, O. (Assoc.); No. 61, Oscar Heim, 119–21 New York Blvd., Jamaica, N. Y.; No. 62, George A. Hyde, c/o the Mentholatum Co., Wichita, Kans.; No. 63, John D. Jansing, 645 S. 41st St., Louisville, Ky.; No. 64, Harold W. Johnson, 2216 Tenth Ave., Rockford, Ill.; No. 65, Gustav C. Kostell, 13607 Thornhurst Drive, Cleveland, O. (Assoc.); No. 66, S. L. Leiner, 952 Lakeview Road, Cleveland, O. (Assoc.); No. 67, Lucien H. LeMaitre, 220 Aspinwall Ave., Brookline, Mass.; No. 68, Samuel Lester, 875 E. 105th St., Cleveland, O. (Assoc.); No. 69, James T. Liddell, 3909 15th St., Detroit, Mich.; No. 70, Malcolm J. MacLeod, 40 Spruce St., Watertown, Mass.; No. 71, Robert Lawton McClard, Swifton, Ark.; No. 72, Grover C. Mason, 7253 Olive Ave., Chicago, Ill.; No. 73, Joseph D. Matthes, 20 Lee Street, Boston, Mass.; No. 74, J. C. Meresicky, 1619 E. 117th St., Cleveland, O. (Assoc.); No. 75, Edwin W. Miller, 11511 Mayfield Rd., Cleveland, O. (Assoc.); No. 76, Julius Miller, 3300 E. 134th St., Cleveland, O. (Assoc.); No. 77, Eliezer Nochimow, 489 Willoughby Ave., Brooklyn, N. Y.; No. 78, John A. Obester, 2801 Scranton Rd., Cleveland, O. (Assoc.); No. 79, Edgar B. Oliver, 120 Fredonia St., Longview, Texas; No. 80, Edward H. Plogman, 2501 Fairview Ave., Cincinnati, O.; No. 81, George W. Raiziss, 1720 Lombard St., Philadelphia, Pa.; No. 82, Richard Romeyn, 14200 Fenkell St., Detroit, Mich.; No. 83, M. R. Rosene, 1656 Bryn Mawr Ave., E. Cleveland, O. (Assoc.); No. 84, Walter John Schmoll, 3322 Hewitt Crescent, Cincinnati, O.; No. 85, K. W. Schweickardt, 2065 Cornell Rd., Cleveland, O. (Assoc.); No. 86, Matthew Seifer, 76 Mora St., Dorchester, Mass.; No. 87, Harry Shapiro, 176 Riverdale Ave., Brooklyn, N. Y.; No. 88, Sister Louise Boswell, 215 Decatur St., Cumberland, Md.; No. 89, Sister Scholastica Rodgers, 14 Bartlett St., Lowell, Mass.; No. 90, R. R. Stemple, North Main St., Waynesburg, O. (Assoc.); No. 91, Winton A. Webb, 1619 East 117th St., Cleveland, O. (Assoc.); No. 92, A. L. Wells, 2020 Cornell Rd., Cleveland, O. (Assoc.).

(*Motion No. 18*) *Vote on applications for membership in the A. Ph. A.*

E. F. KELLY, *Secretary.*

HERMANN THOMS (1859–1931).

Pharmacy throughout the world mourns because of the passing of one of the greatest among pharmacists. The news of his death (November 28th) reached us too late for expressing the loss of this great teacher in a tribute which his rank demands, therefore, only a notice is given here and more will be said of him in the next issue of the JOURNAL. In the last number (page 1240) reference was made to the award of the Hanbury Medal. The *Süddeutsche Apotheker-Zeitung* dedicates its editorial page to him and concludes by saying that "his memory will live in the endeavor to serve and promote the profession, and his example will be an influence for greater and better pharmacy." Editor Hugo Kantrowitz writes: "The sad news was a great shock and will be for all who had the privilege of knowing him. A wonderful man—the greatest one in pharmacy—there will never be one like him again."

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meeting of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

CHICAGO.

The 200th meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the university of Illinois School of Pharmacy on the evening of Tuesday, November 17th. The meeting was presided over by President Hynes.

Mr. Emig, instructor at the Pharmacy School, gave a short review of the articles appearing in the September and October issues of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The speaker of the evening was Julius Riemenschneider, past-president of the Chicago Retail Druggist's Association, and last year's president of the National Association of Retail Druggists. Mr. Riemenschneider is a retail druggist of Chicago, who has earned an enviable reputation as a successful business man—not by "merchandising" alone, not by prescription work alone, but by a combination of these. His subject was "The Independent Drug Store, Its Problems and Possibilities."

Mr. Riemenschneider began his discussion by pointing out that one trouble with the retail drug business to-day is that too many leases are not in line with the volume of business. Many stores are paying ten cents out of every dollar sale for rent.

The following suggestions were made for the development of a profitable drug store:

A suitable location must be chosen as this is of primary importance to a successful business.

Find out how to run the drug store for your particular location and *run it.*

Direct mail advertising, sent as first class mail, with particular attention to the correct addresses and spelling of names and with a personal signature, was found to bring very good results.

Have every delivery bear a shop label with name and address plainly written and not scribbled over the delivery package.

Place inserts in every package with name and address of the store thereon, advertising products handled by the store.

Never permit a prescription to leave the store unfilled, no matter how much it costs to get the ingredients.

Send notices to doctors, notifying them of new products you are carrying in stock for their use.

Send a letter of appreciation to the doctors at least twice, for the business they have sent you.

The drug store in present competition must have a life-saving department and the pharmacist can build the department for which he has been trained, that is, the Prescription Department. The prescription business can be built up by anyone, but you must work at it and give it much of your attention. An essential requirement for a good prescription business is a complete stock of materials.

The good-will of the neighborhood and the neighborhood business is as essential as the good-will of the doctors.

After a doctor has sent a new customer to your store, with a prescription, follow this up with a personal letter thanking him for the

business. By means of this "follow up" letter you are likely to gain a steady customer; at least, you are bringing your name to the person's attention.

Window displays are alternated, with about every fourth window display showing high class articles which do not bring many sales to the store, but which give it prestige.

Adopt everyday "chain store" prices. Have a "long shot" line of your own and do not hesitate to use your own name on products leaving your store.

Combination deals should be frowned on by retail druggists. The druggist cannot make profit when he is giving away merchandise as well as potential profit.

Never permit the loss of a single cash discount.

Sixty-seven per cent gross profit was made on prescriptions, so if this department is developed competition on advertised merchandise can be met and the average profit on the entire sales of the store will be sufficient to insure a satisfactory income.

Personal work in your own store plus the aid of organizations such as the National Association of Retail Druggists, Illinois Pharmaceutical Association and Chicago Retail Druggists Association will insure the independent retail druggist of making a success of his business.

LAWRENCE TEMPLETON, *Secretary.*

NEW YORK.

The November meeting of the New York branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the College of Pharmacy, Columbia University, on Monday, the 9th; there were 78 members present, of whom 18 attended a Get-Together Dinner preceding the meeting.

The chair was taken by President Robert P. Fischelis, who called upon the secretary to read the minutes of the October meeting; these were approved.

Treasurer Currens' report was read and accepted.

Chairman Lehman, of the Committee on Education and Legislation, spoke of the trends in the increased taxing of tobacco and gasoline in many States as reported by the Tobacco Merchants' Association, and said that tax measures being drawn up by some States would be designed to tax perfumes, cosmetics and other luxuries for State revenue. He reported on the New York and Indiana chain store taxes, saying that a tax along the lines of the latter would be introduced at the coming session of the New York Legislature.

Dr. Mayer, for the Audit Committee, stated that the bills submitted to him had been sent to the treasurer for payment.

The secretary reported 13 additional Student Members from the Columbia University, College of Pharmacy and 1 from the Fordham College of Pharmacy; he had received applications from Edward White for membership in the Branch and from Abraham Etkins for membership in the parent organization. A motion made to approve the applications for Branch membership was carried.

The president thanked Editor Wimmer and Mr. Chevalier for publishing the A. PH. A. membership appeal in the *New York Journal of Pharmacy.*

Dean Diner reported progress for the Committee on Professional Relations.

Chairman Schaefer of the Committee on Entertainment for the meeting of the Boards and Colleges of Pharmacy of District No. 2, spoke of the plans for the banquet on March 14th and said that he would report further progress in January.

The president again reminded the members of the arrangements for the presentation of the Remington Medal to Prof. E. Fullerton Cook at Philadelphia on November 16th and said he hoped that as many as possible would attend.

Chairman Schaefer, of the Remington Medal Committee, reported the die for the medal had developed cracks and it was necessary to replace it; he moved that the custodian of the die be authorized to arrange for the making of a new one. The motion was approved.

Chairman Lewis N. Brown of the Committee on the Progress of Pharmacy gave a very interesting report on the following topics: "The Discontinuance of Bloomingdale's Century-Old Prescription Department," "Psyllium Seed and Its Increased Sale," "President Sturmer's address on Pharmaceutical Education before the American Association of Colleges of Pharmacy," "Chamois Skin as a Separator for Immiscible Liquids," "A Substitute for Rubber Gloves," "A New Poison Ivy Treatment," "The Determination of Phenolphthalein in Emulsions," "The Use of Hydrogenated Oils as Ointment Bases," and the ruling of the Department of Health of the City of New York that Barbital and its derivatives can only be sold on prescriptions.

President Fischelis then introduced the speaker of the evening, Mr. L. E. Warren of the Food, Drug and Insectide Administration of the U. S. Department of Agriculture at Washington, D. C., who gave an illustrated lecture entitled "Pharmacy and Medicine in Ancient Egypt."

(As this most interesting paper has been printed in full in the October 1931, issue of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION,[1] readers are referred to that publication.)

The large number of excellent slides shown made this interesting subject even more fascinating for the audience.

Vice-President E. A. Bilhuber called upon Dr. Raubenheimer to discuss the paper, Dr. Raubenheimer said how much he had enjoyed the evening; he thought that the history of pharmacy was much neglected and should be brought to the attention of all students. He remarked upon the fact that, for all the 4000 years that have passed since the days of Ancient Egypt, little real progress has been made in some directions, since many remedies used then are still official in the U. S. P. and N. F. or are in use as household remedies.

Mr. Seley cited a number of references to the preparation and uses of drugs in the Bible.

Dean Anderson rose to say how much the members enjoyed the privilege of hearing Mr. Warren's lecture and that it was encouraging to see how many old medicines were being used to-day; he felt that some of the newer ones were still only experiments and many would have to give way to time-tested remedies. Upon his motion, a rising vote of thanks was given to Mr. Warren, and the meeting adjourned.

HERBERT C. KASSNER, *Secretary.*

THE ACADEMY OF PHARMACY AND THE NORTHERN OHIO BRANCH OF THE A. PH. A.

The Academy of Pharmacy (Cleveland) has been organized as a society devoted entirely to the professional aspects of pharmacy with a desire to be of service to the physician. Every member of the Society is a registered pharmacist and each pharmacy is listed and is inspected and equipped for pharmaceutical work. The Society invites criticism with a view to improve the service. The statements regarding its objects are given in Bulletin No. 1.

[1]Page 1065.

Bulletin No. 2 has been issued to physicians in which the objects of the Society are explained and coöperation of the members of the Society is offered.

Dean Edward Spease prepared a comprehensive presentation of the purposes of the organization, which was addressed to physicians of Cleveland—the subject of the message was entitled "Professional Pharmacy."

BALTIMORE.

The December meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Emerson Hotel on Thursday, December 10, 1931.

E. G. Eberle presented a brief but comprehensive report upon the Remington Medal meeting recently held at Philadelphia, in which he outlined the remarks of the principal speakers and commented favorably upon the large and representative attendance at that gathering. Chairman E. Fullerton Cook, of the Revision Committee of the Pharmacopœia XI, was the recipient of the medal.

Director Lewis E. Warren, of the Research Unit of the Food, Drug and Insecticide Administration of the Department of Agriculture, presented his illustrated lecture on "Pharmacy and Medicine in Ancient Egypt." This lecture, which was first presented before the AMERICAN PHARMACEUTICAL ASSOCIATION at Miami, has received such favorable comment that Mr. Warren, in response to numerous requests, has presented it before several of the local branches.

The meeting was preceded by a dinner, and was well attended. The presence of quite a few ladies graced the occasion.

WILLIAM F. REINDOLLAR, *Secretary.*

PHILADELPHIA.

The December meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held on Tuesday evening, December 15, 1931, in the Library, Sharp and Dohme, Broad and Wallace Streets. The subject for discussion was "A Symposium on Digitalis."

Various phases of this subject were discussed by the following authorities: *Botany*, E. H. MacLaughlin; *Pharmacognosy*, W. J. Stoneback; *Manufacture of Galenicals*, Laurence L. Miller; *Standardization*, Paul S. Pittenger; *Retail Phases*, Ambrose Hunsberger; *Clinical Indications*, J. B. Wolffe. After the general discussion of this problem, a survey following

the commercial progress of Digitalis, from the crude drug to the finished product was made through the plant.

Arrangements are being made to visit two other large drug manufacturing plants during the January and February meetings.

J. C. MUNCH, *President.*
W. J. STONEBACK, *Secretary.*

REMINGTON MEDAL AWARD FOR 1931.

The Remington Honor Medal for 1931 was awarded to Chairman Fullerton Cook of the U. S. P. Revision Committee in recognition of his distinguished services in pharmacopœial revision.

A testimonial dinner in honor of the recipient was held at Hotel Pennsylvania, Philadelphia, November 16th. Usually the award is made in New York City under the auspices of the founders of the medal, the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION.

About one hundred and seventy participated in the dinner and those in attendance came from New York, Philadelphia, Williamsport, Baltimore, Washington, Pittsburgh and other cities.

President James C. Munch of the Philadelphia Branch welcomed the visitors and introduced President Robert P. Fischelis of the New York Branch as toastmaster. The latter gave a brief account of the history of the Remington Medal Award and spoke of the work of Professor Cook which led to the latter's selection for the honor.

Dean LaWall was introduced and spoke interestingly on Professor Cook as a friend and co-worker. He said that he had always found him loyal to the ideals of Professor Remington, and to his associates in the Philadelphia College of Pharmacy. He commented on his great capacity for work and the manner in which he had assumed the responsibilities for the production of the Pharmacopœia, following the demise of Chairman Joseph P. Remington.

Dean H. V. Arny was introduced and spoke on the subject, "Professor Cook, the Pharmacopœia Maker." He recounted interestingly the many trials through which Professor Cook had successfully steered the "pharmacopœial ship." He referred to the fact that Chairman Cook had been eminently successful in harmonizing divergent views among the members of the Revision Committee in the interests of producing a work which had earned the designation of "peer among the pharmacopœias of the world."

Owing to the absence of Dean Jacob Diner, Prof. Otto Raubenheimer summarized the activities of the recipient. The recipient after expressing his thanks for the award recounted the accomplishments of Professor Remington and gave an interesting description of the latter, his personality and ideals.

The arrangements of the meeting were handled in splendid fashion by a Committee headed by Secretary Herbert C. Kassner of the New York Branch and Secretary Wm. J. Stoneback of the Philadelphia Branch.

Mr. Percy Remington, son of Prof. J. P. Remington, attended the dinner.

INTERNATIONAL PHARMACEUTICAL FEDERATION.

BY T. POTJEWIJD, SECRETARY GENERAL.

The Board of the International Federation met in Budapest in October. The detailed agenda, which appeared in the second *Bulletin* of the Federation this year, led to elaborate discussions. The inquiry on military pharmacy, started by request of the AMERICAN PHARMACEUTICAL ASSOCIATION, was closed in the beginning of this year. Monsieur Barthet wrote a report on this inquiry, the conclusion of which says: That for those states, which have a military organization, with a military medical service attached to it, it would be desirable to establish a military pharmaceutical service. The publication of the detailed report, which contains data of 23 countries, is looked to with great interest.

It was decided to make a few more inquiries on the status of the practice of Pharmacy in hospital pharmacies. This inquiry seems also to be of special interest for the AMERICAN PHARMACEUTICAL ASSOCIATION.

At the same time the "Comité des Spécialités" had a meeting in Budapest, which committee took important decisions respecting the working methods of the committee, and the scientific report on the active elements in "Specialties," as more closely studied.

POSTPONEMENT OF SEVENTH AMERICAN SCIENTIFIC CONGRESS.

The Director General of the Pan American Union advises that word has been received from the Mexican Government that the Seventh American Scientific Congress which was to have been held in Mexico City from February 5 to 19, 1932, will be held in November 1933.

EDITORIAL NOTES

Editor: E. G. Eberle, 10 West Chase Street, Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* CHARLES H. LAWALL, *Vice-Chairman;* E. F. KELLY, *Secretary;* H. V. ARNY, A. G. DUMEZ, H. A. B. DUNNING, WILLIAM B. DAY, C. E. CASPARI, J. H. BEAL, W. BRUCE PHILIP, T. J. BRADLEY. *Ex-Officio Members:* WALTER D. ADAMS, *President;* J. G. BEARD, J. W. DARGAVEL, *Vice-Presidents;* C. W. HOLTON, *Treasurer;* E. G. EBERLE, *Editor of the Journal;* A. G. DUMEZ, *Editor of the Year Book;* THOMAS ROACH, *Chairman of the House of Delegates.*

Collaborators: The Members of the Council; E. FULLERTON COOK, *Chairman,* U. S. P. Revision Committee; E. N. GATHERCOAL, *Chairman,* N. F. Revision Committee; Chairmen of the Sections, A. PH. A.: L. E. WARREN, C. J. CLAYTON, W. G. CROCKETT, ROWLAND JONES, J. T. LLOYD, TOWNES R. LEIGH, *President,* A. A. C. P.; CHARLES B. JORDAN, *Chairman,* Executive Committee, A. A. C. P.; A. L. I. WINNE, *President,* N. A. B. P.; HENRY C. CHRISTENSEN, *Secretary,* N. A. B. P. Scientific Section—Board of Review on Papers: *Chairman,* GLENN L. JENKINS, Baltimore, Md.; EDWARD E. SWANSON, Indianapolis, Ind.; W. J. HUSA, Gainesville, Fla.

ABSTRACT OF PROCEEDINGS, U. S. PHARMACOPŒIAL CONVENTION.

The secretary of the United States Pharmacopœial Convention, L. E. Warren, 2 Raymond St., Chevy Chase, Md., announces that the "Abstract of the Proceedings of the Meeting of the Convention," which was held in Washington in May 1930, will be ready for distribution about January 10, 1932. Each officer and delegate present at the 1930 meeting is entitled to receive a copy. In order that unnecessary delay and expense may be avoided the secretary requests such delegates as have moved since May 1, 1930, to send their new addresses to him.

SUPPLY OF PHARMACEUTICAL STANDARDS AVAILABLE.

Attention is invited to the fact that a new supply of "Pharmaceutical Standards" published by the combined Contact Committee of the American Drug Manufacturers' Association, in coöperation with the Food and Drug Administration of the U. S. Department of Agriculture, has just been received from the press, and copies in loose leaf form with leather binders may be had at $3.00 each from Carson P. Frailey, *Executive Vice-President* and *Secretary* of the American Drug Manufacturers' Association, Albee Building, Washington, D. C., or from Clarence W. Warner, *Secretary* of the American Pharmaceutical Manufacturers' Association, care of The Maltbie Chemical Company, 246 High Street, Newark, New Jersey.

This *Manual* contains allowable tolerances and approved methods of analysis for seven ampul formulas; thirty-one compressed tablet formulas, and nineteen hypodermic tablet formulas, to which monographs covering other formulas will be added from time to time. The book has come to be of outstanding importance to all manufacturers of standardized medicinal products as well as to all governmental, state and municipal laboratories having to do with enforcement of drug laws.

UNITED STATES CIVIL SERVICE EXAMINATIONS.

The United States Civil Service Commission announces the following-named open competitive examinations: Assistant Supervisor of Nurses (Indian Service), Chief Nurse (Indian Service), Head Nurse (Indian Service), Graduate Nurse (Various Services), Graduate Nurse, Visiting Duty (Various Services).

Applications for the positions of assistant supervisor of nurses, chief nurse, and head nurse, Indian Service, and for the positions of graduate nurse, and graduate nurse, visiting duty, various services, must be on file with the U. S. Civil Service Commission at Washington, D. C., not later than December 30, 1931.

CHINESE PHARMACOPŒIA PUBLISHED.

The Chinese Republic has published its Pharmacopœia; hitherto China has been using the pharmacopœias of Japan, Great Britain and the United States. The contents

of the Pharmacopœia show that it is largely based upon those of Great Britain and Germany. It contains the name of some 680 chemicals. Individual names have been adopted from the British system, so that there is little Chinese about the whole work.

Totaro Shimizu, member of the editorial board of the Japanese Pharmacopœia, said:

"I was much interested in reading the copy—some parts of it resemble the German Pharmacopœia, while others are like the British Pharmacopœia. Maximum limits are adopted from the German system; however, those of other countries are also adopted in part."

THE PRESCRIPTION COUNTER IS THE HEART OF A MODERN DRUG STORE.

Dr. Lewellys F. Barker, an outstanding member of the medical profession, speaking before the Alumni Association of the University of Maryland said:

"The modern pharmacy or drug store of the highest type is certainly better than any that ever existed before. It gives due consideration to the ethics of the medical profession and of the pharmacist as well as to the rights of the general public. The prescription counter is the heart of the business of the modern pharmacy; it is regarded as its most important feature, the efficiency and reliability of which must be jealously safeguarded. Such a pharmacy is a most valuable ally of the reputable physician, for with its adequate equipment and competent staff it serves as an important medical service station."

Die Pharmaceutische Presse has issued a memorial number commemorating thirty-five years of its existence and the fortieth anniversary of the Austrian Pharmaceutical Association. It is an illustrated number containing pictures of the presidents of the Association and editors of the publication.

The *Northwestern Druggist* for December says editorially that during Pharmacy Week the drug stores received a great deal of favorable publicity. About the same time, however, pharmacy received from certain sources some decidedly unfavorable publicity through captions of articles in the public press, drawn upon to some extent from an address, in which the statement was made, "The Destiny of the Retail Drug Store Lies in the Field of Merchandising." In commenting thereon in a letter to the *Northwestern Druggist*, Wroe Alderson states that nothing can be done to prevent the use of captions by journalists, but that the tone and tendency of the article is diametrically opposite to that of his address. The publication comments further that if the newspaper men can through friendship and otherwise discuss the facts and consider pharmacy and the drug store from the proper light such stories will find their way into the waste basket instead of in the press.

The *American Druggist*, for December, has an editorial page entitled "Helping to Make Pharmacy What It Was Destined to Be." The AMERICAN PHARMACEUTICAL ASSOCIATION is appreciative of such contributions and doubtless such coöperation will be helpful in bringing the message of pharmacy to the readers of the valued publication. The article speaks of the AMERICAN PHARMACEUTICAL ASSOCIATION "as mellow with tradition, brilliant in achievement, and bound up in its development have been the lives of famous gentlemen to whom pharmacy points with pride. Woven into the fabric of the ASSOCIATION are the labors and the researches and the hopes of the men who have clung fervently to the ideals of their profession, which is pharmacy."

All publications of the drug-trade activities have always lent a helping hand in the work of the A. PH. A., and the ASSOCIATION is appreciative of this coöperation for the promotion of pharmacy.

The December number of the *Journal of the American Dental Association* contains an article by Dr. Jacob B. Bailin on "Prescription Writing and Dentistry" in which the author states that "prescription writing to-day in the dental profession is an art which is being sadly neglected." He makes this statement "after careful observation of prescriptions in pharmacies throughout New York City and also basing his conclusions on an article by Dr. Charles M. Proctor" quoted in the following:

"Another method of which, I believe, we are neglectful is that of prescription writing. So many men are content simply to prescribe a proprietary article, when many times in the treatment of the diseases of the mouth, there ought to be a differentiation even in powders, pastes and washes demanding our careful consideration. We can readily see that with a little care and thought, a prescription carefully written is far more effective in the treatment of the diseases with which the patient is affected and will likewise elevate his respect

for us when we are able to give him something more definite than a proprietary remedy."

The author outlined his article from the ethical and public health angle. He concludes by saying, "Don't be afraid to prescribe for the advancement of our profession (dental) as a true part of the medical art for the benefit of the patient and public and for our own advancement and success in our chosen profession."

An interesting and comprehensive article on Sir Joseph Wilson Swan by William Mair, is printed in the December 5th number of the *Pharmaceutical Journal and Pharmacist*. A very brief article appears in the JOURNAL A. PH. A. for November, page 1244. He was a scientist, a pharmacist and a member of the British Pharmaceutical Society. He was in active control of two notable British pharmacies and associated in his work with Barnard Proctor, a nephew of Michael Faraday, also with John Mawson, a brother-in-law, who was for many years known in connection with collodion manufacture; also, Thomas Barclay who later was knighted.

Public Health Reports, for December 4th, contains directories of state and city health officers for 1931—a useful reference.

THE WELLCOME RESEARCH INSTITUTION.

The president of the Royal College of Surgeons, the Rt. Hon. Lord Moynihan, K.C.M.G., C.B., M.S., LL.D., on November 25th, laid the corner stone of the new building in course of erection for the Wellcome Foundation, Ltd., at the junction of Gordon Street and Euston Road, London. Among those present at the ceremony was the president of the Pharmaceutical Society (Mr. A. R. Melhuish).

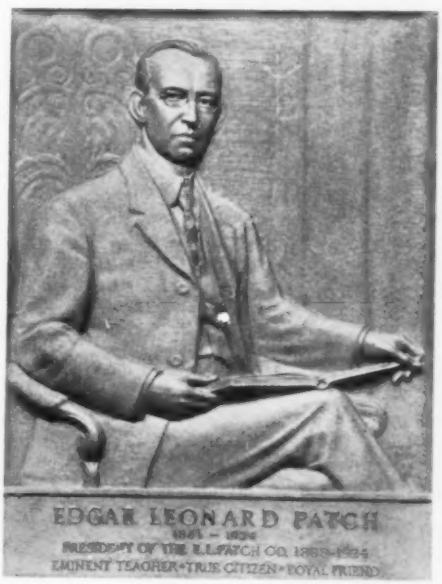
The Wellcome Research Institution embraces the following affiliated research laboratories and museums: Bureau of Scientific Research, Physiological Research Laboratories, Chemical Research Laboratories, Historical Medical Museum, Museum of Medical Science. The new building will furnish the additional accommodation which is required owing to the recent extensive development of these research laboratories and museums, and will provide facilities further to coördinate their activities.

The new building, designed by Mr. Septimus Warwick, F.R.I.B.A., will occupy a site measuring 225 ft. by 135 ft., part of which was originally occupied by the Foundation's Bureau of Scientific Research and Museum of Medical Bureau of Scientific Research and Museum of Medical Science. It will be provided with the most modern scientific research equipment. On the Euston Road frontage there is a colonnade of twelve fluted Ionic columns masking the second, third and fourth floors. A rusticated base extends to the height of the ground-floor story. The top-story above the columns is recessed from the main building. There are eight floors in all. The elevation to Gordon Street consists of two end pylons with a row of six Ionic columns similar to those on the front.—From the *Pharmaceutical Journal and Pharmacist*.

NOTE: Dr. Wellcome is Honorary President of the AMERICAN PHARMACEUTICAL ASSOCIATION and has been a member since 1875.

BRONZE BAS-RELIEF OF E. L. PATCH UNVEILED.

"With impressive ceremonies, a memorial tablet for the late Prof. Edgar Leonard Patch, founder of the E. L. Patch Company, pharmaceutical manufacturer, was unveiled De-



cember 6th in the office of the company, at Stoneham. The ceremony was attended by many pharmaceutical leaders and men and women in all walks of life who had been touched

in some way by the spirit of the man they came to honor.

"The tablet, a life-size bas-relief, cast in bronze by the Gorham Manufacturing Company, is the work of Leonard Craske, famous Boston sculptor. Mr. Craske, who attended the unveiling, is widely known for his memorial to the Gloucester fishermen, "The Man at the Wheel," at Gloucester, Mass.

"In keeping with the simplicity of the life of Professor Patch, the tablet bears the plain inscription: 'Edgar Leonard Patch, 1851–1924, President of the E. L. Patch Company, 1888–1924, Eminent Teacher—True Citizen—Loyal Friend.' The tablet occupies a prominent place on the walls of the company's office, with a special light installed in a beam of the ceiling, the better to bring out the fine work of the sculptor.

"The unveiling was at an appropriate time because Professor Patch was born eighty years ago, December 2, 1851. He died February 27, 1924, after a busy life of service to the community and to his chosen profession. George Y. Hutchins, a lifelong associate and secretary of the E. L. Patch Company since its organization in 1888, released the silken cord which unveiled the tablet. Preparation of the tablet and of the unveiling exercises was under supervision of a committee of directors consisting of Ralph R. Patch, president and general manager; James A. Patch, vice-president; George Y. Hutchins, secretary; William S. Lister, assistant treasurer; and Edgar W. Emery."—Liberty is taken in quoting the foregoing from the *Oil, Paint and Drug Reporter*.

Professor Patch was president of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1894; for a sketch see JOURNAL A. PH. A., April 1922, page 243; pages 442 and 900 of Volume X, March 1924, page 274, and April 1924, page 382.

HISTORY OF THE KAPITEL APOTHEKE ZUR HEIL, MARIA, ZAGREB (AGRAM).

Our fellow member in Agram, Dr. Viadro Bartulic, is owner of above-named pharmacy which dates its origin back to 1599. A history of this venerable establishment has been prepared and in a succeeding issue it is hoped to present an article, accompanied by news of the pharmacy.

PERSONAL AND NEWS ITEMS.

The Veterans' Hospital at Indianapolis was dedicated on December 13th. It has a capacity of one hundred and fifty-two beds and will be ready for occupancy soon after the first of the year.

A page of the *Virginia Medical Monthly* is devoted to an article by **Prof. W. G. Crockett,** of the School of Pharmacy, Medical College of Virginia. The article deals with U. S. P. and N. F. preparations. The purpose of the paper is two-fold—"to urge a wider use of official preparations in prescription practice; to express the hope that physicians and pharmacists in Virginia may work in closer coöperation to the end that their common cause, the promotion of public health, may be definitely advanced."

The *Pharmaceutisch Weekblad* of October 31st quotes the *Berlin Tageblatt* in saying that the Chemical Institute in Hamburg, through Prof. Dr. P. Rabe, has prepared synthetic quinine and its hydrochloride. If this proves correct a great step in synthetic chemistry will have been made.

Revista Filipina de Medicina y Farmacia for October prints an address by Dr. Basilio J. Valdez on Pharmacy Week, and another by our fellow member Dr. Patrocino Valenzuela on the same subject. An interesting article also is the "Story of Quinine." Abstracts of articles from the JOURNAL A. PH. A. are included in this interesting number.

The *Maryland Pharmacist* has issued a special number which includes the proceedings of the 1931 annual meeting of the Maryland Pharmaceutical Association. It includes addresses of importance and the issue will serve as a valuable reference.

Dr. Nicholas Murray Butler, president of Columbia University, is a recipient of the Nobel Prize for this year.

Dr. James Henry Breasted, famous Egyptologist of the United States, who has received many degrees from various countries, graduated from the Chicago College of Pharmacy. He was one of the foremost speakers, this month, at the dedication of the new million dollar building of the University of Chicago. His discoveries have been written about in the magazines, in press and by scientists, and he has been honored by many institutions. In 1921 he was awarded the Rosenberg medal for his contribution to civilization.

Matthias Noll, a pioneer member of Kansas Pharmaceutical Association and also an honored member of the AMERICAN PHARMACEUTICAL ASSOCIATION, has been requested to compile a history of Kansas pharmacy. He is en-

gaged in this work and has requested the druggists of Kansas to supply him with historical information. This is a suggestion for other states to follow.

President Walter D. Adams, of the AMERICAN PHARMACEUTICAL ASSOCIATION, in a recent letter to the *Houston Post*, deplores the advertising of misfortunes. He said in part, "The constant talk of poverty and the indiscriminate dispensing of charity are pauperizing and degenerating the citizenship of the country. Doubtless, there are many deserving cases of charity but why advertise it? Let us quietly see to it that no one who wants work is in distress."

The Washington Society of Alexandria held a memorial service in honor of Dr. James Craik, December 13th, at the old Presbyterian meeting house. Dr. Craik was an intimate friend of Washington and the first Surgeon General of the American Army.

Secretary Hayman issued a most interesting Christmas *Bulletin*. He concludes the *Bulletin* with a history showing various depression periods. The one of 1873 lasted thirty months; the one of 1903, twenty-five months. The *Bulletin* also contains President Ernest K. Hoge's message to the members.

Dr. Edward Kremers delivered the second lecture for 1931 of the Dohme Foundation at Johns Hopkins University, on "Quinhydrone Hypothesis of Plant Pigmentation," November 20th. Dr. L. H. Baekeland inaugurated the series on October 23rd with a lecture entitled "My Mistakes," in which he discussed the fortunate accidents which had contributed to his success in chemical research and industry.

Subsequent lecturers for this year under the Dohme Lectureship are scheduled as follows: Dr. C. F. Kettering, General Motors Corporation, Detroit, Mich.; Dr. Julius Stieglitz, University of Chicago; Dr. James F. Norris, Massachusetts Institute of Technology; Dr. Gilbert N. Lewis, University of California; Dr. Irving Langmuir, General Electric Company, Schenectady, New York; Prof. Alfred Stock, Technischen Hochschule, Chemisches Institut, Karlsruhe, Germany, and Prof. F. Simon, University of Breslau, Germany.

Dr. Kremers attended a Veterans' Dinner while in Baltimore and was also guest of Dr. and Mrs. A. G. DuMez. He spent part of his visit at the School of Pharmacy, University of Maryland.

Prof. H. G. Greenish, one of our honorary members, has been elected an honorary member of the Austrian Pharmaceutical Society.

On the tenth anniversary, as president of Abbott Laboratories, **Dr. Alfred S. Burdick** was honored by officials and employees of Abbott Laboratories by being presented with a set of resolutions and an oil painting commemorating the event.

Dr. Frederick J. Cullen, of the United States Food and Drug Administration, will speak before the Association for the Advancement of Science meeting in New Orleans, December 28th–31st on "Fake Remedies Unearthed by the Pure Food and Drug Act."

Dean A. Richard Bliss, Jr., of the School of Pharmacy of the University of Tennessee at Memphis, was elected President of the Tennessee Academy of Science at the annual meeting at Nashville on November 28, 1931.

Bernard E. Read—of the Department of Pharmacology, Peiping Union Medical College—has prepared an interesting volume on Chinese Materia Medica. These are translations and notes from the Pen Ts'Ao Kang Mu by Li Shi-Chen, A. D. 1597. The price is $3.00 in Peiping currency. The volume should have a place in medical and pharmacy school libraries and deserves a place in other libraries. Many individuals will find much of interest. Dr. Read has contributed a number of articles to the JOURNAL A. PH. A.

William P. Herbst, Washington pharmacist, after nearly a half century in pharmacy, has retired to devote attention to other interests; he states, however, that he expects to keep in contact with the members of the profession.

Augustus C. Taylor, District of Columbia, and James W. Wise, Delaware, are now members of the Advisory Committee of the Department of Education, N. A. B. P.

W. Bruce Philip is now the General Counsel of the N. A. R. D. He spoke before the Baltimore Retail Druggists' Association, December 14th. **Mrs. Philip** hopes to arrange affairs in California and join her husband soon after the first of the year.

Miss Fanchon Hart, associate professor of Materia Medica at the College of Pharmacy of the City of New York, Columbia University, has won her diploma as Master of Arts at the autumnal conferring of degrees at New York University. Professor Hart is now registered in the graduate school of the University and is pursuing her work toward her Ph.D. degree.

Charles H. Cunningham, U. S. Commercial Attaché to Mexico, was the guest of honor at a luncheon tendered him by the drug trade at the Hotel New Yorker recently.

Mr. Cunningham, who recently returned from Lima, Peru, in charge of the office of Commercial Attaché, gave an interesting talk on the market situation in that country as well as in Ecuador.

Dean Edward H. Kraus, of the Michigan College of Pharmacy, was honored by the selection of his name for a newly discovered mineral "Krausite." The discoverer is William F. Foshag, of the National Museum, Washington, D. C.

Chief Pharmacist Walter Zur-Linden, attached to the U. S. Naval Hospital Corps School, Hospital Station at Portsmouth, Va., retires January 1st, after serving twenty-five years in the United States Navy. He will be placed on the retired list of officers.

During the World War he served part of the time with the First Brigade, U. S. Marines. At the close of the World War he was appointed Attache Charge de Service National d'Hygiene Publique, of the Republic of Haiti and was Public Health Officer of Gonaives, Petit Goave, and Niragoane, Haiti, with additional duty as Medical Officer with the Gendarmerie D'Haiti. Since that time he has served in the various naval hospitals and as the head of the department of Pharmacy, Materia Medica and Chemistry in the U. S. Naval Pharmacists' Mates School.

John Culley has been appointed Secretary *pro tem* of both the Retail Druggists' Association of San Francisco and the Alameda County Pharmaceutical Association. This fills the vacancy caused by the resignation of W. Bruce Philip who is now Washington counsel of the N. A. R. D.

At the recent meeting of the drug section of the New York Advertising Club, Samuel Dworkin, retail pharmacist and chairman of the Fair Trade Committee of the New York Pharmaceutical Conference, and Dr. H. Sheridan Baketel, president of Read & Carnrick, and former president of the American Pharmaceutical Manufacturers' Association, and the American Drug Manufacturers' Association, and editor of *Medical Economics*, debated the subject of what is known as "switching."

OBITUARY.

EDWIN FENNO LEONARD.

Edwin F. Leonard, twice Mayor of Springfield, Mass., member of the State legislature, and known locally and throughout Massachusetts as a man of honest convictions, sincerity of purpose, and determination, died November 24th. The deceased was a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1909. He received his early education in Springfield and was enrolled in the high school in the class of 1880. He engaged with E. N. Gates in the drug business. Later, he worked for H. A. Hamilton and set up in business on his own account in 1890. In 1904 he formed a partnership with Homer F. Dickinson. For a time the firm owned three stores; failing health required the withdrawal of Mr. Dickinson and, as a result, two of the stores were disposed of.

Mr. Leonard was a former president of the Massachusetts State Pharmaceutical Association and during many years occupied prominent place in the administrative affairs of the Association. He was a direct descendant of James Leonard, who came to this country about 1640. Members of the Leonard family participated in various ways in the Continental Army and upbuilding of the government. He was prominent in Masonic circles and a number of clubs.

Mr. Leonard is survived by his wife, son and daughter. The son, Clifford S. Leonard, is associated with the Research Laboratories of Burroughs, Wellcome & Co. of Tuckahoe; he, also, is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The prominence of the deceased is evidenced by the space given in his memory by the Massachusetts press and, more particularly, the Springfield publications.

ADDISON DIMMITT.

Addison Dimmitt, president of the Newman Drug Company, retailer, Louisville, and a co-partner in the Newman Pharmacal Company, manufacturer and wholesaler, the same city, died November 13th, aged 66 years.

Mr. Dimmitt was born in Maysville, Ky. He became connected with the Newman enterprises in 1886. For many years he was a member of the Kentucky Board of Pharmacy and had been president of the board as well as of the Louisville College of Pharmacy and the Kentucky Pharmaceutical Association. He had been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1895 and also was active in several local business organizations.

Mr. Dimmitt is survived by his widow and one son.

GROVER CLEVELAND BOND.

Grover C. Bond, member of the Illinois Board of Pharmacy and of the A. PH. A., died November 21st following a stroke of apoplexy.

Mr. Bond was born in Mt. Vernon, Ill., February 6, 1887. After graduating from high school he entered the University of Illinois School of Pharmacy, from which he was graduated in 1911. After graduation he engaged in business in the firm of Porter & Bond and has been continuously in business in Mt. Vernon, with the exception of the period served by him in the World War.

The esteem in which the deceased was held was evidenced by the closing of drug stores of the city during the funeral services. He was a member of the Masonic bodies.

Mr. Bond took an active part in the affairs of the Illinois Pharmaceutical Association and was interested in every movement for the advancement of pharmacy.

The deceased is survived by his wife, née Cecile Willis.

NELSON SMITH KIRK.

Nelson Smith Kirk was born in Hoboken, New Jersey, on July 22, 1874, but spent his boyhood in Virginia. Arriving at the age of manhood, he came to New York, where he entered the Brooklyn College of Pharmacy, from which he was graduated in 1894. He was a member of Phi Delta Chi pharmaceutical fraternity. Upon his graduation from college he engaged in business for himself at 168 Rutledge Street, Brooklyn, where he remained until the time of his death, a period of thirty years. He was a member of Charity Lodge, F. &. A. M., the Brooklyn Lodge of Elks and several local retail and pharmaceutical associations. Mr. Kirk died in Jamaica, N. Y., on November 3rd.—N. S. K., JR.

ALONZO LILLY.

Alonzo Lilly, widely known Denver business man, and member of the AMERICAN PHARMACEUTICAL ASSOCIATION, died at his home in Denver, December 4th. He was born in Baltimore; here he received his early education. Soon after completing his studies he took a position with Lilly Rogers & Co., wholesale druggists. He went to Denver about thirty years ago and was associated with the Davis Brothers Drug Co. for a number of years. Later, he became representative of Sharp & Dohme and was District Manager. He was highly regarded in the profession and easily made friends. The deceased is survived by his wife and one daughter.

FRANK S. MEARNS, K. C.

Frank S. Mearns—solicitor for the Ontario College of Pharmacy, Ontario Retail Druggists Association and Canadian Pharmaceutical Association—died suddenly on November 26th. Dean Burbidge said of him:

"As solicitor for the Canadian Pharmaceutical Association since its inception, Mr. Mearns was a tried and trusted pilot. Not only was his advice sought and accepted on every occasion but no member of the Association had the welfare of the druggists of Canada more at heart or was more ready to give of his best in their interest. Our loss as an Association is beyond measure."

Mrs. Mildred Brokmeyer—wife of Eugene C. Brokmeyer, our fellow member and former counsel of the N. A. R. D.—died at Georgetown University Hospital, Washington, D. C., November 27th.

SOCIETIES AND COLLEGES.

OFFICERS-ELECT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION FOR 1932–1933.

The Board of Canvassers of the AMERICAN PHARMACEUTICAL ASSOCIATION, composed of C. B. Allison, Sam P. Harben and John B. Ray, all of Texas, has announced as the result of the mail ballot for officers of the ASSOCIATION, the election of the following:

President, W. Bruce Philip, San Francisco, Calif., now of Washington, D. C.

First Vice-President, Rowland Jones, Gettysburg, S. Dak.

Second Vice-President, G. H. Grommet, Miami, Fla.

Members of the Council (for three years), J. H. Beal, Camp Walton, Fla.; C. H. LaWall, Philadelphia, Pa.; C. E. Caspari, St. Louis, Mo.

These officers will be installed at the next annual meeting of the ASSOCIATION which will be held in the Royal York Hotel, Toronto, Canada, during the week of August 22 to 27, 1932, and which will be a joint meeting with the Canadian Pharmaceutical Association.

ANNUAL MEETING OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

The annual meeting of the Drug Trade Bureau of Public Information was held at the Hotel Washington, Washington, D. C., on December 9, 1931. The following organizations were represented by the delegates named: AMERICAN PHARMACEUTICAL ASSOCIATION, Dr. E. F. Kelly and Dr. Robert P. Fischelis; National Association of Retail Druggists, Samuel C. Henry, Ambrose Hunsberger and W. Bruce Philip; National Association of Boards of Pharmacy, H. C. Christensen, A. L. I. Winne and Dr. A. C. Taylor; American Association of Colleges of Pharmacy, Prof. E. F. Cook.

The Editor of the News Bulletins reported that twenty-six bulletins had been mailed to newspapers, in addition to special bulletins that had been sent out to the pharmaceutical press, and that special services had been rendered to various national, state and local pharmaceutical organizations in connection with their publicity problems. A display of newspaper clippings, covering some four thousand separate items that had appeared in the press of the United States, was presented, and the delegates were enthusiastic in their approval of the continuation of the work. It was pointed out, however, that the financial resources available through contributions from the AMERICAN PHARMACEUTICAL ASSOCIATION, the National Association of Retail Druggists, the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy totaled but one thousand dollars for the ensuing year, and it was therefore decided to again appeal to state and local associations for financial assistance in continuing the work.

Through the good offices of the AMERICAN PHARMACEUTICAL ASSOCIATION, arrangements will be made to take care of the mechanical details in connection with the issuing of bulletins in the office of that organization. Dr. Fischelis, the Editor of the News Bulletins, will continue to prepare copy for such publications as are released to the press. The following officers were reëlected for the ensuing year: *President*, Ambrose Hunsberger, Philadelphia; *Secretary-Treasurer*, H. C. Christensen, Chicago; *Editor of the News Bulletins*, Dr. Robert P. Fischelis, Trenton.

NATIONAL DRUG TRADE CONFERENCE.

The National Drug Trade Conference, convened in Washington, December 9th, held a most interesting meeting. The Conference adopted a resolution declaring that no good purpose would be served by creating a government commission to establish standards of drugs and protesting against such a proposal. Reference is made under "Standards for Drugs" in the editorial section of this number and also in the report of the American Pharmaceutical Manufacturers' Association.

The report of the Commission on Potent and Toxic Drugs was another subject of great importance. The preliminary draft was presented by Chairman James H. Beal who reported that it now appears certain that a satisfactory list of potent and toxic drugs can be agreed upon and that will be of a nature to be of value in poison legislation. The Conference agreed that legal definitions of poisons are impossible and that the agreed specific list would be more satisfactory.

Secretary E. L. Newcomb, N. W. D. A., spoke on the publicity material for Pharmacy Week, Christmas and First Aid posters, and the results of this work.

Dr. R. L. Swain spoke on narcotic legislation and also on the progress being made relative to the position of pharmacy in the Medical Department of the U. S. Army.

Commissioner Harry J. Anslinger addressed the Conference on the work of the Geneva Narcotics Convention. In reply to questions Commissioner Anslinger said the treaty would call for no additional legislation in this country except perhaps a change in the method of dispensing of seized drugs and possibly some minor changes and legal requirements. He said that state enactments on narcotics were of greater scope and severity than federal. Supporting this, Counsel Alfred L. Tennyson, of the Bureau of Narcotics, said that the Bureau is asking for three requirements in every state law; namely, a satisfactory enforcement agency, centralizing state enforcement to deal with legal problems and forming a contact with national enforcement officers; definite and effective provisions for suspension or revocation of licenses for infraction or addiction, and provisions for taking care of addicts by the state and for requiring addicts to submit to curative treatments.

The Conference adopted a resolution declaring that drugs, preparations and derivatives

to be included in a draft on a uniform state narcotic law should be restricted to such as are now covered by the Federal Narcotic Law and that it be left to the states severally to decide whether such list should be enlarged.

Commissioner Anslinger explained that Cannabis and closely related drugs present problems in some localities, but not in others, and should be dealt with locally. The Conference also adopted a resolution, heartily recommending prompt ratification of the 1931 Geneva convention by the United States.

The Conference of Commissioners on Uniform State Narcotic Laws at its meeting in Atlantic City decided that another draft on the proposed uniform state narcotic law be prepared.

The National Drug Trade Conference adopted a resolution declaring that state legislation should be based on and made supplemental to federal legislation.

Dr. R. L. Swain reported that conferences had been held with the office of the Surgeon General of the Army relative to the status of pharmacists and that the latter, officially, has given his approval to the principle of giving pharmacy greater recognition and providing commissions for pharmacists in the Medical Department of the Army. It is expected that the bill for accomplishing this purpose will be introduced in this session of Congress.

The Capper-Kelly Bill was reindorsed. The Committee on Simplification of Glass Containers reported progress; recommendation was made that graduation on bottles be discontinued. After considerable discussion it was agreed that the W. Va. prohibition law threatened many difficulties for manufacturers.

H. C. Christensen reported on the progress of the 1933 World's Fair; the Conference was assured that pharmacy would be represented with an exhibit showing the progress in the profession.

Chairman W. F. Rudd, for the Committee on the Status of Pharmacy, reviewed "changes in the status of pharmacy during the past score of years and dwelt on recent and impending changes. Government recognition of the professional qualifications of pharmacists was pointed to as a recent achievement, as was the growth of legal recognition of the necessity of pharmaceutical training in the management of drug stores.

"The committee expressed a desire to see greater embodiment in laws of the conception of pharmacy as an individual and personal professional service; the placing of drugs and medicines more firmly on a public health basis apart from the commercial basis; insistence that all those who take part in the production and distribution of medicinals be required to have pharmaceutical training; and diversion of research appropriations from individual firm laboratories to the laboratories of schools of pharmacy."

The Conference adopted a resolution creating a committee to solicit contributions and endowments and otherwise influence pharmaceutical wealth for the support of education and research in pharmacy.

All officers of the Conference were reëlected. They are: *President*, Carson P. Frailey, Washington, D. C.; *Vice-President*, Ambrose Hunsberger, Philadelphia; *Secretary-Treasurer*, E. F. Kelly, Baltimore; *Counsel in the U. S. Chamber of Commerce*, S. L. Hilton, Washington, D. C.

AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION.

The American Pharmaceutical Manufacturers' Association held a three-day semiannual meeting in Washington, December 9th to 11th. It was decided to hold the next meeting, beginning May 16th, in the Sedgefield Inn, Greensboro, N. C. It was also agreed that hereafter the semiannual meeting would be held in Washington only in alternate years. Detroit was selected for the next winter meeting.

Twenty-six papers were presented to the Committee on Research of the Association by undergraduates in pharmacy colleges. Four awards were made: The first to Philip J. Smithisler, N. Pacific College, for his paper on "Hydrogenated Oil as an Ointment Base." Kimball Fisher, also of North Pacific College for his paper on "Triethanolamine Stearate as an Emulsifying Agent." The third prize went to C. Jeleff Carr of the University of Maryland School of Pharmacy for his paper on "The Study of Some Filtering Materials Used in the Preparation of Pharmaceuticals;" and the fourth award was made to C. Allen Harper of the School of Pharmacy of the University of Kansas for a report on "The Possible Treatment of Solution of Hydrogen Peroxide, U. S. P., to Maintain Its Standard Percentage Strength Together with a Discussion of Specific Gravity as an Index of Strength." It was decided that in the future only three prizes would be given and that the

balance now available is to be used for research on glass containers.

Chairman E. Fullerton Cook, was one of the speakers and the Association was host at a dinner on December 10th to a number of officials of the Food and Drug Administration of the Department of Agriculture, several of whom gave informal talks.

Quoting from the report in the *Oil, Paint and Drug Reporter*, of December 14th, Chairman Cook said in part, that he did not favor the suggestion for a government commission to write the Pharmacopœia or to set up legal standards apart from the Pharmacopœia. He expressed the view that if there is any valid constitutional bar to the present method of legalizing U. S. P. standards, this can be met by legal ingenuity better than by creating a government commission to make the standards. He pleaded with members of the profession to guard the privilege of service through the Pharmacopœia which pharmacists have held and declared that the American method of pharmacopœial revision is the most flexible, provides for the greatest possible exchange of scientific knowledge and guards against special interests by complete publicity.

Dr. C. E. Vanderkleed reported for the Contact Committee. He stated that a number of new tolerance standards had been developed during the year which will be published very soon by the U. S. Department of Agriculture. These standards are for the following products: Ampuls of quinine hydrochloride and urethane; ampuls of sodium salicylate and iodide with colchicine; ampuls of glycerophosphates compound containing sodium cacodylate; sodium glycerophosphate and strychnine cacodylate; ampuls of calcium chloride; ampuls of procaine hydrochloride; compressed tablets of sodium nitrite; and the amount of excess to be placed in ampuls to allow for waste.

Special meetings have been held by the Contact Committee during the year and the following resolutions were adopted:

"The next Pharmacopœia, preferably, should prescribe a definite ergot alkaloid or mixture of ergot alkaloids as a standard, but in the meantime it should be required that fluidextract of ergot be kept in a definite manner and the physiologic assay method should be standardized; the present fluidextract No. 2160 is satisfactory as a standard of comparison, but definite description of the blueing of the cock's comb should be agreed upon; fluidextracts compared with the standard should be at least 80 per cent of the strength of No. 2160, but the importation of super-strength ergot should be permitted."

The Committee recommended work during the year on ephedrine salts, phenolbarbital, sodium-phenol-barbital, digitalis, calcium gluconate, ampuls and tablets; mercury succinimide ampuls, phenolphthalein tablets, calcium lactate tablets and distilled water for intravenous injections.

WHOLESALERS AND RETAILERS DISCUSS FREE DEALS.

BY E. L. NEWCOMB, SECRETARY.

In accordance with actions recently taken at the N. A. R. D., N. W. D. A. and F. W. D. A. conventions, a conference of retailers and wholesalers was held at the Hotel Washington, December 8, 1931.

The meeting was attended by the following who responded to the call sent out by Secretary S. C. Henry of the N. A. R. D.: J. Mahlon Buck, O. J. Cloughly, J. W. Dargavel, J. J. Dreyer, Geo. B. Evans, S. C. Henry, G. Barret Moxley, E. L. Newcomb, Paul Pearson, Bruce Philip, Julius Riemenschneider, H. H. Robinson and R. E. Lee Williamson. G. Barret Moxley attended as a substitute for A. K. Mayer.

On motions duly made and seconded S. C. Henry was asked to serve as chairman and E. L. Newcomb as secretary of the conference.

The chairman outlined the attitude of the N. A. R. D. with respect to so-called Free Goods Deals. E. L. Newcomb outlined the work of the N. W. D. A. on this subject and presented each in attendance with a copy of N. W. D. A. Statistical Division Bulletin 17 on Free Goods and Principles of Practice Outlined by H. J. Ostlund covering Free Deals.

After discussion, the conference took the following actions:

1. Moved by Moxley, seconded by several, that we condemn the offering of excessive amounts of free goods in deals, which offers lead to trade demoralization, that where free goods are offered they should be in the ratio of one free to the dozen or in rare or in the case of seasonal goods not more than two free to the dozen and that deals should be of a size to be readily absorbed by retailers.—Carried.

2. Moved by Robinson, seconded by Dreyer, that: When a manufacturer who offers free goods receives an order for his products which

calls for free goods he should ship the free goods directly to the wholesaler with the order.—Carried.

3. Moved by Cloughly, seconded by Robinson, that: Wherever practicable free goods and the goods with which they are given should be included in unit shelf packages or shipping cases, the packages and shipping cases being labeled as containing free goods and the amount therein.—Carried.

The following was unanimously approved:

Wholesale druggists should strictly observe manufacturers' requests relative to the period during which so-called free deals are offered and manufacturers should make every effort to see that deals are released to all retailers in a given district at the same time.

Moved by Williamson, seconded by Buck, that Free Goods offered with deals should be of the same item as the bulk of the deal itself.—Carried.

Moved by Williamson, seconded by Dargavel, that:

We heartily endorse the resolution of the N. A. R. D. adopted at its 1931 convention, on combination item deals. We emphatically condemn and disapprove this type of deal and urgently request that manufacturers discontinue offering such deals.—Carried.

It was moved by Buck and seconded by Pearson that a committee consisting of S. C. Henry, R. E. Lee Williamson and E. L. Newcomb be appointed to confer with manufacturers or associations, as they deem best, and present the views of retailers and wholesalers as set forth in the several motions.

OFFICERS OF INSECTICIDE AND DISINFECTANT MANUFACTURERS ASSOCIATION.

The eighteenth annual meeting of the insecticide and disinfectant manufacturers was held in New York City, December 7th and 8th. The attendance was the largest in its history.

President Robert C. White, in his address gave a résumé of business conditions and particularly as it applies to the organization.

The officers elected for the ensuing year are: *President*, Evans E. A. Jones, New York; *First Vice-President*, Peter Dougan, Rahway, N. J.; *Second Vice-President*, Samuel R. Bell, Pittsburgh; *Treasurer*, John Powell, New York; *Secretary*, Harry C. Coe, Holbrook, Mass.

PHARMACY EXTENSION, PURDUE UNIVERSITY, DISPLAYS.

The service created by the Pharmacy Extension Department is professional and educational in character. All displays either show one phase of professional pharmacy or describe the products or preparations of certain chemicals or drugs. Four displays that have been made are "Medicinal Products from the Cow," "Iodine, Its Source and Preparation," "Crude Drugs of Indiana," and "Requirements of Pharmacy."

AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

President Nicholas H. Noyes in a recent bulletin to the members of the American Drug Manufacturers' Association states that arrangements have been made with the Greenbrier Hotel at White Sulphur Springs to hold the annual meeting of the organization there, April 18–21, 1932.

THE INTER-SOCIETY COLOR COUNCIL.

The first annual meeting of the Inter-Society Color Council will be held at 9:30 A.M., Tuesday, December 29, 1931, in the Lecture Hall of the Museum of Science and Industry, 220 E. 42nd St., New York City. In addition to the regular business of the meeting, the program will include the following items:

Statement by Chairman E. N. Gathercoal regarding future possibilities of the Council.

Report of the Executive Committee on Constitution and By-laws.

A talk covering general principles upon which the Inter-Society Color Council is founded.

This will be followed by business sessions. This meeting will provide an opportunity for the presentation, by delegates, of such problems as they may wish, on behalf of their societies or associations.

COLUMBIA UNIVERSITY REQUIREMENTS FOR MEDICAL STUDENTS.

After many conferences and mutual concessions, Columbia University has agreed to recognize the four-year B.S. diploma of the College of Pharmacy as fulfilling fifty-five of the sixty minimum points required by the state and the balance of the sixty points may be obtained by taking extra work in Columbia summer courses in Zoölogy, English and Physics. The three-year Ph.Ch. diploma will

be evaluated as representing forty-five points toward the sixty minimum points.

MURAL PAINTINGS DEDICATED AT PHILADELPHIA COLLEGE.

Two murals continuing the series of paintings depicting the progress of pharmacy through the ages were unveiled and dedicated at a ceremony at the Philadelphia College of Pharmacy and Science, November 25th. One of the murals was presented by E. R. Squibb and Sons in memory of Dr. Edward R. Squibb. One of Dr. Squibb's first assistants in his pioneer research work was Joseph P. Remington, for 44 years professor of pharmacy at the Philadelphia College, and its dean for 25 of those years. The presentation was made by Theodore Weicker, vice-president of E. R. Squibb and Sons.

Another mural in the series was unveiled and dedicated at the same time as a gift of the 1931 graduating class. Presentation was made by Theodore Campbell, Jr., a member of that class.

With the unveiling of these two murals the Philadelphia College foyer now contains four of the projected series of six mural paintings showing the development of the art and science of pharmacy from earliest recorded history to its present-day eminence. The first two of the mural paintings in the series were presented by Dean and Mrs. Charles H. LaWall, both graduates of the Philadelphia College, at ceremonies there, June 8th.

COLORADO PHARMACAL ASSOCIATION.

Colorado Pharmacal Association is making plans for the 1932 meeting, to be held at the Antlers Hotel, in Colorado Springs, June 14th, 15th and 16th. There is good reason to believe that it will mark another climax of attendance, interest and accomplishment.

DISTRICT OF COLUMBIA PHARMACEUTICAL ASSOCIATION.

The District of Columbia Retail Druggists' Association has adopted a new constitution and by-laws and provided a change of name to that given in the title; the annual meeting will be held in April. The constitution and by-laws were prepared under the direction of Chairman S. L. Hilton; the present officers will continue in office until the meeting in April.

BRADBURY MEMORIAL MEETING.

A memorial meeting, honoring the late Wymond H. Bradbury, was held December 1st, at George Washington University. The ceremonies were held under the direction of the pharmaceutical organizations of Washington and attended by pharmacists of Washington and of Baltimore, and tributes were presented by representatives of various bodies of Washington, of Maryland Pharmaceutical Association, AMERICAN PHARMACEUTICAL ASSOCIATION and others—R. L. Swain represented the former and S. L. Hilton the latter. These tributes are to be assembled in a memorial volume and it is planned to place a suitable memorial in the College of Pharmacy of George Washington University.

NEW MEDICAL OFFICERS NAMED FOR FOOD AND DRUG CONTROL POSTS.

Appointment of two medical officers in the drug control unit of the Food and Drug Administration has been announced. The vacancies were caused by the resignations of Dr. J. Durrett and Dr. G. E. Clarke.

The new doctors are N. O. Tribble, of Atlanta, Ga., and Virgil McDaniel, Seattle, Wash. The former received his M.D. degree from Emory University in 1915. He served one year as interne at the Wesley Memorial Hospital and two years as resident pathologist at the Grady Memorial Hospital, both of which are Atlanta institutions.

From 1917 to 1919, Dr. Tribble was a medical officer in the Army and American Red Cross, being stationed in France and the Balkans. He was an assistant surgeon with the U. S. Public Health Service for a short time in 1920, resigning to become professor of bacteriology and pathology at the Atlanta Southern Dental College. Since 1928 he has been in private practice in Atlanta.

Dr. McDaniel is a University of Nebraska graduate. He served his interneship in the Swedish Hospital, Seattle, and since August 1926, has been with the U. S. Public Health Service.

INCREASED TAXES FELT CERTAIN, BUT PASSAGE OF SALES TAX DOUBTED.

Press reports say that with the National Treasury facing a deficit of close to $2,000,000,000, and with party leaders apparently agreed that tax revision at this session of Congress must be undertaken, business is now chiefly concerned with what form the

added imports will take. If the sales tax, suggested repeatedly, is to be the lever with which the sagging resources of the Government are to be raised to a normal level, it is certain that the proposal will be opposed bitterly by business in all its branches. Despite the repeated calling up of the sales tax as the way out of the emergency, it is not generally believed that the proposal could survive a vote should it seriously be entered into the business of the House. It is from the House that revenue legislation originates and there appears to be little chance that the sales tax will be included on the program for revision of taxation.

MEDICAL DEPARTMENT BOARD.

At a meeting of the board of the Medical Department Officers consideration was given to a study of the Army medical, dental and veterinary schools with a view of having them meet more fully in the future the needs of postgraduate professional training of officers in the medical department. The report to the Surgeon General must be rendered not later than January 15th.

THE WAINWRIGHT BILL.

The *Army and Navy Register* states that "the War Department will not submit the measure under above caption at this time. There is, however, nothing to prevent its introduction by an individual member of Congress as was done by Mr. Wainwright, who in addition to committee membership had a previous record as assistant secretary of war in which capacity he acquired a full appreciation of the urgent need of maintaining the medical department at a strength adequate for the protection of the life and preservation of the health of the members of the military personnel."—See September JOURNAL, pages 996–998.

BOOK NOTICES AND REVIEWS.

Die Katalyse. Die Rolle der Katalyse in der Analytischen Chemie. (Catalysis, the Rôle of Catalysis in Analytical Chemistry) VON DR. GERTRUD WOKER, Vorstand des Institutes für physikalische-chemische Biologie der Universität Bern. II Spezieller Teil. Zweite Abteilung: Biologische Katalysatoren. 2. Hälfte: Atmungsfermente. Verlag von Ferdinand Enke in Stuttgart, 1931. XIX + 592 pages; price unbound Rm. 76, bound Rm. 79.

This book comprises volumes XXVII and XXVIII of the excellent and comprehensive series, "Die chemische Analyse," prepared under the direction of the late Dr. B. M. Margosches. Volumes XI and XII published in 1910, XXI and XXII published in 1915, and XXIII and XXIV published in 1924 in the same series also treated of the rôle of catalysts in analytical chemistry. The combined works, all by Dr. Woker, probably constitute the most complete reference existent on this phase of catalysis.

The book is divided into two parts. Part I deals with the zymases or fermentation enzymes. In this part such subjects are considered as: The chemistry of normal fermentation processes, intermediate and by-products of alcoholic fermentation and the mechanism of their formation, the fermentation of amino-acids, the stimulation of alcoholic fermentation and its mechanism, the analytical utilization of ferments, the determination of ferments, the application of alcoholic fermentation to the estimation of sugars, survey of the literature treating of fermentation, and the relation between fermentation and oxidation ferments. Part II treats of the oxidizing ferments under such headings as: The history and theory of oxidases, theory of the peroxydase—catalase system, the determination of peroxidases, oxidases, peroxides and catalases and their applications, pyrogallol and other phenols as substrates, phenolphthalein as substrate, the determination of catalase effect, procedure for the quantitative estimation of catalases, the isolation of peroxidase, peroxides, laccase and catalases, determination of the catalase effect, the oxido-reduction enzymes, iron as a ferment model, determination of reductases, determination of oxidases. The treatment of the theory and mechanism of the action of specific enzymes, and the detailed procedures for their estimation and for their use in determining other substances should be welcomed by all persons engaged in biochemical aspects of pharmacy and pharmaceutical analysis to which it applies as well as to all who are engaged in the fermentation industries.

The value of this volume as a reference is enhanced by a very extensive bibliography, an authors' index containing about 2400 names and a subject index well cross-referenced.—GLENN L. JENKINS.

Science in Action. EDWARD R. WEIDLEIN and WILLIAM A. HAMOR, Mellon Institute of Industrial Research. McGraw-Hill Book Company, Inc., New York City, 1931. xiii — 310 pp. 32 illustrations (figures). vi tables. 15.5 x 23.5 cm. $3.00.

The preface to this interesting and instructive book sets forth its scope and purpose in an accurate and precise manner. The result of the authors' effort is a sketch, "in clear language, of the methods and accomplishments of industrial research, that is, scientific investigation as applied to the production and merchandising problems of various branches of manufacture, and to the promotion of human welfare, especially in the United States." The treatise is intended primarily for the layman and it accomplishes its aim; for it is intelligible to an ordinary reader with no knowledge of science in particular, who desires to learn about the general procedures and results of scientific research particularly in this country.

While throughout the volume the spirit of industrial research methodology takes a prominent place, here and there bits of related history, appropriate philosophy and supporting literary gems are found; and at times the authors exhibit the zeal of a crusader of science. Quoting: "This applied science scintillates with splendid achievements; she exhibits her opportunities; she allures young specialists from the universities. But in the background is the pure science who feeds her, the mother whom she profoundly respects.

"Science, scientific management, and industrial research never stop moving, never relax; they are full of zest and eagerness and contemptuous of obstacles."

Following the groundwork of industrial research is a chapter on the development of industrial research in the United States in which is given a brief description of the successive stages by which our industries have expanded. After this comes a discussion of the present status of industrial research in this country, Germany and Great Britain. Here facts and figures are arrayed in a convincing and at times startling manner.

Of peculiar interest to the ordinary reader is that portion of the book dealing with the importance and contribution of scientific research to the necessities of life, its relation to modern medicine and such familiar industries as agriculture and its products.

The reviewer regrets that the authors have so little to say about research in pharmacy.

It is impossible in a brief space to enumerate all the progressive research and robotization of operations which, page after page, flashes before the eye; but we are unwilling to pass by in silence the two chapters dealing with exploits of science with plastics and new industries through chemical synthesis, respectively, without saying "well done."

The treatment of scientific management and rationalization is an excellent exposition of the philosophy and principles involved. Here, the authors are at their best. Here, is the masterpiece of their book. Here, they are no longer telling, but are teaching. Here, will be found a valuable discussion (1) of labor and its relation to automatic machinery improved manufacturing methods, and continuous processes; (2) of scientific research, management and banking; and (3) of the international aspect of industrial research.

A discussion of the industrial-research laboratory management and industrial-research workers concludes the main portion of the book. Then follows an index of the names of persons and organizations mentioned in the text, a subject index follows and concludes the book. This last list includes scientific, technical or commercial designations. In both indexes especially important page references are printed in bold-face type. An additional aid to the reader is the "Contents" on page xi. The type is clear; the paper good.

The book will be helpful to those desiring to improve their plant operations and practices as well as to young men who are thinking of scientific careers in industry.—TOWNES R. LEIGH.

Practical Physiological Chemistry. By P. B. HAWK and OLAF BERGHEIM; tenth edition, 1931. P. Blakiston's Son & Co., Inc., Philadelphia. Price $6.50.

This is the tenth edition of one of the best-known American textbooks on physiological chemistry, comprising 930 pages with 280 illustrations and a number of colored plates. The present volume marks the twenty-fifth anniversary of the book since the appearance of the first edition, written by the senior author, Dr. P. B. Hawk. A comparison of the book before us with the first edition of the text strikingly emphasizes the enormous advances made in both the science of physiological chemistry and the teaching of that sub-

ject in the last quarter of a century. The original edition, which appeared in 1907, was only about one fifth of the size of the present volume. Even a comparison of the present tenth edition with the ninth edition, which appeared in 1926, reveals the enormous strides made by the research man in this important branch of medicine and biology. The ninth edition of the book has been largely rewritten and revised to bring it up-to-date with the advances in the science itself and the elaboration of its quantitative methods and technique. Some of the chapters have been entirely rewritten, as, for instance, that with which the book begins on physicochemical properties of solutions and those on metabolism and vitamins and others.

As one would expect, a great deal more information borrowed from the field of physical chemistry has been incorporated into this modern textbook on physiological chemistry than before. The subject of metabolism is now discussed in several chapters: one devoted to metabolism of proteins, carbohydrates and fats; another to inorganic metabolism, a subject which received scant attention in the old textbooks; and a third to the vitamins and deficiency diseases. In addition to these, there is a special chapter on the respiratory metabolism and neutrality regulation. Another contains a discussion of energy metabolism, and special attention has been given to blood and tissue analyses.

The present volume consists of thirty-five chapters and an appendix. This being a work on *practical* physiological chemistry, the actual informative reading matter is interspersed with practical experiments for the laboratory student. The use of different types serves to emphasize the important and practical parts of the book. An adequate but not too profuse list of references is incorporated in the work and conveniently printed in footnotes at the bottom of the pages.

The book opens with a discussion of the physicochemical properties of solutions, followed by a chapter devoted to carbohydrates. Succeeding these are three long chapters on proteins, their composition, chemical structure of amino-acids, etc., and their various properties, a special fourth chapter being devoted to nucleoproteins and nucleic acids. Chapters VII and VIII are devoted to fats and milk. These are followed by three chapters dealing with the chemistry of epithelial and connective tissues, muscular tissues and nervous tissues, etc. Twenty-four pages are devoted to enzymes and their action in Chapter XII, and the whole subject of gastrointestinal digestion, absorption, putrefaction, detoxification, etc., is covered in Chapters XIII to XXI, inclusive, embracing about one hundred pages. Blood and lymph and tissue analyses are discussed in Chapters XXII and XXIII. Then follows an exhaustive treatment of metabolism from every conceivable angle, covering 234 pages. Five chapters are devoted to the study of urine, its physiology, pathological constituents, methods of analysis, etc. The appendix contains a list of reagents and solutions, a table of atomic weights and logarithmic tables.

The chapter on endocrine organs is perhaps not as satisfactory as those regarding most of the other topics treated in the book, only a superficial description being given. This may have been done purposely because of the shifting opinions on the subject at the present time.

The physical form of the book is all that could be desired, the print clear, the paper of excellent quality and the illustrations in nearly every instance distinct and well reproduced. Some of the colored plates are beautiful. The numerous tables and graphs scattered through the pages will be found of immense value by the student and other workers using the book for reference. One of the best features of the work is a clear and cogent exposition of the chemical relationships of the various compounds, the chemistry of which has been solved by modern investigators.

In the authors' opinion, the work presents one of the best written, most comprehensive and useful texts on biochemistry, not only in English but in any modern language. . . .
DAVID I. MACHT.

The Merchandising of Drug Products. By PAUL C. OLSEN, PH.D., Lecturer in the School of Business of Columbia University and the Philadelphia College of Pharmacy and Science. Member of the Directing Committee of the Druggists' Research Bureau, Appleton and Company, Publishers, New York, N. Y. Price $2.50.

This book is the outcome of a study undertaken by the author for the American Association of Colleges of Pharmacy, to outline a course on merchandising to be required of all students in its accredited schools. Manufacturers and wholesalers of pharmaceutical products and

operators of chain and independent drug stores as well as students of pharmacy will find it a practical guide to scientific merchandising in the drug field.

The first half of the book deals with the merchandising problems of manufacturers and wholesaler dealers. Here the author goes into the classes of merchandise distributed through the drug trade, and the agencies used in their distribution. In the second half of the book the problems of retail druggists are dealt with.

The author's aim has been to analyze the outstanding causes of success and failure in the present-day merchandising of drug products. Constant development in the field of biology, pathology, psychology and economics vitally affect the merchandising of drug products and consideration must be given to these factors as important in busy study. Competition is becoming keener and is making the maintenance of net profits more difficult; gross profits must be considered, but along with these the expenses which are equally important for assuring net profit.

The chapters of Part I deal with profits and merchandising in various divisions and connections, classes of merchandise distributed through the drug trade and in that connection the merchandise handled in different classes of drug stores. The chapter deals with agencies, in the distribution of drug products, advertising through the press, etc. Price problems and policies are discussed from various angles, also the problems of packaging and promotion methods.

As stated, Part II deals with problems of retail distribution and in the various chapters devoted to this subject the methods of both the chain stores and of the independent stores are freely discussed, including the stock, advertising and salesmanship.

The book will serve a useful purpose in developing ideas for business conduct.

Annual Survey of American Chemistry, Volume V (1930), edited by CLARENCE J. WEST, Director of Research Information Service, National Research Council, published by The Chemical Catalog Company, of New York, for the National Research Council. As stated at the beginning, this survey is for the year 1930. The price of the book is $5.00.

Reviews have heretofore been published in the JOURNAL and the value of the survey is quite generally known to the reader. The volume under consideration has nearly 100 more pages than the preceding volume. There are 40 chapters and the matter is presented by those who are authorities on the subjects assigned them.

The chapter on Solutions has been prepared by Victor K. LaMer; the one on Pharmaceuticals by Ernest H. Volweiler; the one on Biochemistry by D. Wright Wilson; on Vitamins, by H. C. Sherman; and the one on Insecticides and Fungicides by R. C. Roark. The other chapters are of equal value although, perhaps, not of the same interest to pharmacists as those named.

The book has an Authors' Index of nearly twenty pages and the Index of Subjects of about half that number. The work has become generally known and has a distinct value in the libraries of schools and manufacturing establishments and as a reference for pharmacists.

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The AMERICAN PHARMACEUTICAL ASSOCIATION is indebted to the following for books and pamphlets and these are gratefully acknowledged:

"Reminiscenses of Early Chicago," by E. O. Gale, presented by Abram Gale of Chicago. Quotations were embodied in an article on Samuel Guthrie in the November JOURNAL.

"Answers to Questions Prescribed by Pharmaceutical State Boards;" "One Hundred Window Trims;" "Window Displays for Druggists;" "Essentials of Pharmacy"—donated by Mrs. Edward Swallow.

"Annual Report of the Smithsonian Institution;" twelve bulletins from the Proceedings of the United States National Museum—from the Smithsonian Institution.

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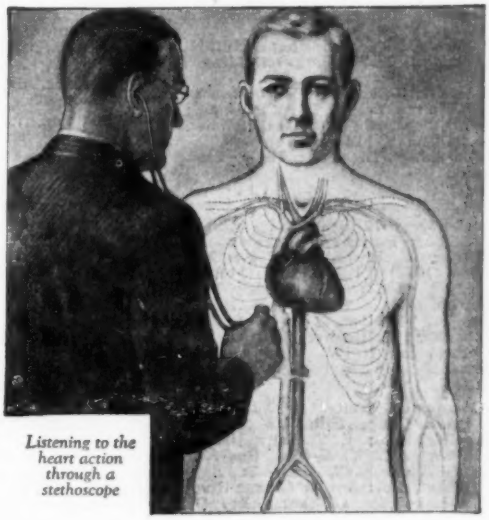

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Symposium Genus Mentha.—*Chairman*, F. J. Bacon, 2045 Adelbert Road, Cleveland, Ohio. Annual meeting will be held in Toronto, Canada.

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